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NANTICOKE ENVIRONMENTAL MANAGEMENT PROGRAM

NETWORK DATA SUMMARY FOR 1982

REPORT NO. ARB-44-84-ARSP

JANUARY 1984

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1984
MOE

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Participants: Environment Canada • Ontario Ministry of the Environment • Ontario Hydro • Stelco Inc. • Texaco Canada Inc.

Table of Contents

		Page
	List of Tables	i
	List of Figures	ii
	Acknowledgements	iii
1.0	Introduction	
2.0	Gaseous Data Analysis	1
2.1	Analysis of Sulfur Dioxide (SO_2) Data	2
2.1.1	Hourly SO_2 Criterion	2
2.1.2	Daily SO_2 Criterion	2
2.1.3	Annual SO_2 Criterion	2
2.2	Analysis of Ozone (0_3) Data	3
2.2.1	Hourly 0_3 Criterion	3
2.3	Analysis of Nitrogen Dioxide (NO_2) Data	3
2.3.1	Hourly NO_2 Criterion	3
2.3.2	Daily NO_2 Criterion	4
2.4	Analysis of Total Reduced Sulfur (TRS) Data	4
2.5	Analysis of Carbon Monoxide (CO) Data	4
2.5.1	Hourly CO Criterion	4
2.5.2	Eight-Hourly CO Criterion	4
2.6	Analysis of Hydrocarbons Methane (CH_4) and Non-Methane (NMHC)	5
3.0	Airborne Particulates Data	5
3.1	Daily TSP Criterion	6
3.1.1	Annual TSP Criterion	6
3.2	Chemical Analyses Results	6
4.0	Precipitation Data	7
5.0	Summary	7
References		9
Tables		10
Figures		25
Appendix 1:	NEMP Particulates Data Collected During January to December 1982	40
Appendix 2:	NEMP Precipitation Data Collected During January to December 1982	59

LIST OF TABLES

Table No.		Page
1.	Emission Estimates	10
2.	Station Location and Description	11
3	Details of SO_2 Exceedance Events for 1982	14
4.	Number of Exceedances of the SO_2 Hourly AQC by Station for 1975-1982	15
5.	Sulfur Dioxide Data Summary by Station	16
6.	Ozone Data Summary by Station	17
7.	Nitrogen Dioxide Data Summary by Station	18
8.	Total Reduced Sulfur Data Summary by Station	19
9.	Details of TRS Events Exceeding 8 ppb for 1982	19
10.	Carbon Monoxide Data Summary by Station	20
11.	Methane Data Summary by Station	21
12.	Non-Methane Data Summary by Station	21
13.	Total Suspended Particulates - Data Summary by Station	22
14.	Details of TSP Exceedance Events for 1982	22
15.	Annual and Seasonal Distribution of Particulates	23
16.	Distribution of Particulates According to Wind Direction	23
17.	NEMP Network Precipitation Data (1979-1982)	24

LIST OF FIGURES

Figure No.		Page
1.	Monitoring Stations in Nanticoke Area	25
2.	Annual Frequency Distribution of SO_2 for 1982	26
3.	Seasonal Frequency Distribution of SO_2 for 1982	27
4.	Annual Frequency Distribution of O_3 for 1982	28
5.	Seasonal Frequency Distribution of O_3 for 1982	29
6.	Annual Frequency Distribution of NO_2 for 1982	30
7.	Annual Frequency Distribution of TRS for 1982	31
8.	Annual Frequency Distribution of C0 for 1982	32
9.	Annual Frequency Distribution of CH_4 for 1982	33
10.	Annual Frequency Distribution of NMHC for 1982	34
11.	NEMP Hi-Vol Sampling Network	35
12.	Annual Frequency Distribution of TSP for 1982	36
13.	Seasonal Frequency Distribution of TSP for 1982	37
14.	NEMP Network TSP - Mean Monthly Concentrations	38
15.	NEMP Precipitation Sampling Network	39

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1. INTRODUCTION:

The Nanticoke Environmental Management Program (NEMP) is a co-ordinated study into the impact of industrial development in the Nanticoke area on air quality in the Haldimand-Norfolk region. It is jointly sponsored by the Federal and Provincial governments, Ontario Hydro, Stelco and Texaco. The NEMP monitoring network, established in the fall of 1978, was operated throughout 1982 to measure adherence to air quality criteria (AQC) for the protection of human health and comfort as well as that of vegetation, animal life and property. In addition to the NEMP network, Ontario Hydro has been operating an SO_2 network of approximately 16 monitors since 1975 and MOE West-Central Region has been operating gaseous monitors at Cheapside and Simcoe as well as a hi-vol network consisting of 6 samplers.

A major industrial complex comprised of a thermal generating station, a steel plant and an oil refinery is situated on the northern shore of Lake Erie in the Haldimand-Norfolk region. Ontario Hydro, Stelco and Texaco operated throughout most of 1982. Table 1 outlines the major emission sources and their 1982 emission estimates for sulfur dioxide and particulate matter. Emissions from Ontario Hydro's generating station are released from two 198-metre stacks (separated by 275 m), whereas emissions from Stelco and Texaco emanate from stacks as well as low-level sources. Monitoring stations have been located according to criteria that take into account predominant wind patterns and source configuration, as well as in reponse to concerned citizens. The network configuration for 1982 remained the same as for 1981. Figure 1 shows the location of monitoring stations and Table 2 lists the parameters monitored at each location.

This report complements the third data summary report covering network data up to December 1981 (4) and summarizes the data collected by the NEMP network during 1982.

2.0 Gaseous Data Analysis

2.1 Analysis of Sulfur Dioxide (SO_2) Data:

Hourly averaged SO_2 concentrations were monitored at twenty locations during 1982. Sixteen stations were operated by Ontario Hydro, two by MOE's West Central Region and two by the NEMP network. Figure 2 shows the annual frequency distribution of hourly averaged SO_2 concentrations for 1982. Seasonal frequency distribution of the hourly SO_2 concentrations is shown in Figure 3. The ninety percentile level coincided with 21 ppb for the winter of 1982 compared with 12, 7 and 11 for the spring, summer and fall season respectively.

2.1.1 Hourly SO_2 Criterion:

The hourly AQC for SO_2 is 250 ppb. There were 10 hours during 1982 when the hourly AQC was exceeded. Details of those hours with exceedances are listed in Table 3 together with the concurrent generating station load. The Nanticoke T.G.S. was the source of the SO_2 exceedances since the monitors were located directly downwind of the station for each event. The maximum hourly averaged SO_2 concentration (436 ppb) was recorded at NE 19. Table 4 shows the number of network exceedances of the hourly AQC for the period 1975-1982.

2.1.2 Daily SO_2 Criterion:

The 24-hour AQC for SO_2 is 100 ppb. Once again, there were no exceedances of the daily AQC. The maximum 24-hour average (49 ppb) was recorded at NE19 on February 10.

2.1.3 Annual SO_2 Criterion:

The annual averaged values at all stations during 1982 were well below the 20 ppb criterion. The highest annual average (7 ppb) was recorded at two locations, NNE05 and NNE16. Table 5 summarizes the SO_2 annual averaged concentrations, as well as other statistics of the observations for individual stations.

2.2 Analysis of Ozone (0_3) Data:

Figure 4 shows the annual frequency distribution of the hourly averaged ozone concentrations for SW37, NNE39 and WNW19. At monitors SW37, WNW19 and NNE39, the ninety percentile level coincided with 58, 46 and 43 ppb respectively (Table 6). The annual average ozone concentration was 34 ppb at SW37, 34 ppb at WNW19, and 25 ppb at NNE39.

Figure 5 shows the seasonal frequency distribution of the hourly averaged 0_3 concentrations. Seasonally ozone levels are highest during the summer period and lowest during the winter. Warm temperatures and strong insolation (characteristic of southerly winds during the summer period), are conducive to ozone formation. The ninety percentile for the entire network concided with 63, 39, 44 and 58 ppb for the summer, winter, fall and spring seasons respectivey.

2.2.1 Hourly 0_3 Criterion:

The hourly AQC for ozone is 80 ppb. During 1982, there were 262 hours when the 0_3 AQC was exceeded. SW37 had the maximum number of exceedances at 131, WNW19 reported 122 and NNE39 reported only 9. Ozone exceedances occurred on thirty days during 1982. Of the 30 days twenty-one were during the growing season (June to September).

2.3 Analysis of Nitrogen Dioxide (NO_2) Data:

Nitric oxide (NO) concentrations were subtracted from total nitrogen oxide (NO_x) values to obtain hourly NO_2 concentrations. The nitrogen oxides network contains five stations (SW37, NNE39, NO7, WNW19, and NNE10). Annual average concentrations were below 10 ppb, see Table 7. Figure 6 shows the annual frequency distribution of the hourly averaged NO_2 values. Ninety percent of the time the NO_2 concentrations did not exceed 20 ppb.

2.3.1 Hourly NO_2 Criterion:

There were no exceedances of the one-hour (200 ppb) AQC during 1982. The maximum hourly NO_2 concentration (100 ppb) was recorded at WNW19, on September 9 at 2200 EST.

2.3.2 Daily NO_2 Criterion:

The daily AQC for NO_2 is 100 ppb. During 1982, there were no exceedances of the daily AQC.

2.4 Analysis of Total Reduced Sulfur (TRS) Data:

TRS was monitored at four locations, (NNE10, NNE05, NNW08 and WNW03 during 1982. Figure 7 shows the annual frequency distribution of the hourly averaged TRS concentrations. As in 1981, the highest hourly averaged TRS concentration (46 ppb) was recorded at the Nanticoke Village (WNW03) monitor, Table 8. On April 24 (2400 EST) and continuing into the early morning hours of April 25 (0200 and 0500 EST), WNW03 recorded concentrations of 46, 16 and 10 ppb respectively. Surface winds (as monitored by the 10 m level of the Jarvis met tower) were light (7-12 km/hr) south-southwesterly to southwesterly during this period. Stelco (situated upwind of WNW03 for southwesterly winds) appears to be the source of this TRS event. Relatively high hourly averaged TRS concentrations are listed with corresponding wind data in Table 9. 11 of the 16 elevated TRS readings were recorded at or near midnight on either Wednesday or Saturday. At this time Stelco begins a quenching process (water spraying of molten slag) to reduce the temperature of the slag. H_2S released, is recorded by the monitor downwind of Stelco.

2.5 Analysis of Carbon Monoxide (CO) Data:

Monitoring of CO continued at NNE39 and SW37 throughout 1982. Figure 8 shows the annual frequency distribution of hourly averaged CO concentrations for 1982.

2.5.1 Hourly CO Criterion:

There were no exceedances of the hourly (30 ppm) AQC for CO during 1982. The maximum hourly averaged concentration (4 ppm) was recorded at SW37, Table 10.

2.5.2 Eight-Hourly CO Criterion:

There were no exceedances of the eight-hour (13 ppm) AQC for CO throughout 1982.

2.6 Analysis of Hydrocarbons Methane (CH_4) and Non-Methane (NMHC):

Hydrocarbon monitoring continued at NNE10, NNE05 and NNW08 throughout 1982. Figures 9 and 10 show the annual network frequency distribution of CH_4 and NMHC. The annual average concentrations for CH_4 and NMHC are summarized in Table 11 and 12 respectively.

It should be noted that the electrical noise problem experienced in the latter part of 1981 continued on into 1982. As of November, the zero calibration was done for 1 to 2 hours to take the average noise level into account. The validity of the observed values remain in doubt.

3.0 Airborne Particulates Data:

The particulate monitoring network in the Nanticoke area during 1982 consisted of 14 hi-vol samplers, operated by NEMP (Figure 11). Glass fibre filters were used at all locations with parallel sampling on Whatman 41 cellulose filters at nine stations. TSP measurements were carried out on the glass fibre filters while a detailed chemical analysis was done on selected Whatman 41 filters. Some of the glass fibre filters were also analysed for polynuclear aromatic hydrocarbons (PAH) and inorganic (CF) and total carbon (CT). A six day sampling cycle was used at all stations except for the hi-vol samplers at W07, NW03 and NNW06, which operated on a three day cycle to monitor the Stelco emissions. Sampling periods were 24-hours in duration.

Suspended particulates are summarized by station in Table 13. As in previous years, the annual geometric means were in the 30-40 ug/m^3 range. The annual and seasonal frequency distributions of TSP for the entire network are shown in Figures 12 and 13. Figure 14 shows the monthly geometric mean for the NEMP network TSP data (1979-1982). The monthly trend in TSP levels has been similar for all four years data.

3.1 Daily TSP Criterion:

The daily AQC for TSP is 120 ug/m^3. During 1982 there were 10 exceedances of the criterion. On January 11, 1982, TSP levels were high throughout the Nanticoke area. Exceedances were reported at four different monitoring locations in the NEMP network. The maximum concentration (324 ug/m^3) was recorded at NNW18. Monitors at N17 (148 ug/m^3), ENE17 (153) and NE16 (123) also recorded exceedances on this day. The prevailing wind direction was west-northwesterly at 27 km/hr. TSP levels were also high on this day in Hamilton.

Three of the remaining six TSP exceedance events are attributed to industrial emissions. At NNW06 and NNE05 daily exceedances were recorded on July 16 (127 ug/m^3) and September 14 (170 ug/m^3) respectively. Surface winds were light and from the southerly quadrant both days. On May 5, light southeasterly winds coincided with a TSP exceedance at NNW03 (134 ug/m^3). The remaining three exceedances were recorded at NNW18 (183 ug/m^3), N17 (256 ug/m^3) and NNW06 (143 ug/m^3) and could possibly be related to agricultural activities or other local fugitive emissions. Details of the TSP exceedance events are listed in Table 14.

3.1.1 Annual TSP Criterion:

The annual AQC for TSP is 60 ug/m^3. Throughout 1982, there were no exceedances of the annual criterion. The maximum yearly average (41 ug/m^3) was recorded at N17.

3.2 Chemical Analysis Results:

Annual and seasonal means for sulfate, nitrate, calcium, magnesium and total carbon levels are shown in Table 15. Data for all four years of network operation (1979-1982) have been included for comparison purposes. Annual means for all five parameters are comparable to those observed in other years. As in previous years, sulfate and total carbon concentrations are highest during the summer season.

During 1982, sulfate, nitrate, calcium, magnesium and total carbon concentrations are higher for southerly versus northerly winds (Table 16).
The chemical analyses results of the selected Whatman 41 filters collected during 1982 for the entire NEMP network are listed in Appendix 1. Total and free carbon results are also listed by station for 1982 in Appendix 1.

4.0 Precipitation Data:

The NEMP precipitation network continued throughout 1982 to collect monthly samples at six sites in the Nanticoke region (Figure 15). Precipitation samples are analyzed for pH, major ions, some nutrients and trace metals. Chemical analysis results for all 1982 precipitation samples are listed in Appendix 2.

Network averaged pH, selected major ion and trace metal concentrations are listed in Table 17. For comparison purposes 1979 to 1981 concentrations are also shown.

As in previous years, there is little annual variation in precipitation concentrations.

5.0 Summary:

This report summarizes the 1982 gaseous data collected by the NEMP, Ontario Hydro and MOE West Central Region networks as well as the 1982 particulate and precipitation data collected by the NEMP network.

The hourly (250 ppb) AQC for SO_2 was exceeded 10 times during 1982. There were no exceedances of the daily (100 ppb) AQC for SO_2. The annual average values at all stations for 1982 were less than half of the annual criterion (20 ppb).

The ozone network recorded 262 hourly exceedances of the ozone AQC (80 ppb), 131 at SW37, 122 at WNW19 and only 9 at NNE39. Ozone exceedances occurred on twenty one days during the growing season.

As in previous years, NO_2 and CO levels were well below their respective AQC during 1982.

Annual average TRS concentrations were less than 1 ppb for all four monitors.

The annual average for methane and non-methane hydrocarbon was less than 2 ppm and 1 ppm respectively.

There were 10 TSP exceedances of the daily (120 ug/m^3) AQC during 1982. Three of these exceedances were attributed to industrial emissions. Four other exceedances occurred on the same day (January 11) and coincided with relatively high levels in Hamilton. Sulfate, nitrate, calcium, magnesium and total carbon concentrations were higher for southerly versus northerly winds.

The pH for wet deposition in the NEMP network during 1982 was 4.1.

Ambient air quality in the Haldimand-Norfolk region continued to be satisfactory throughout 1982.

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Table 1

Emission Estimates (metric tons per year)

	Particulates				Sulfur Dioxide			
	1979	1980	1981	1982	1979	1980	1981	1982
Ontario Hydro	1,500	2,000	2,400	2,400	155,000	144,000	181,000	207,000
Texaco	300	290	280	460	8,500	6,800	4,200	6,100
Stelco	-	106*	191†	321	-	185*	335†	2,393

* coke ovens not operational
† coke ovens operational for only one month

Table 2 Station Location and Description

GEOGRAPHICAL ID	AQUIS ID	E-W UTM8	N-S UTM8	SITE NAME	INSTRUMENT, COMPLIMENT AND NOTES	MAINTAINED BY
BW37	22901	05502	47138	LONG POINT PARK	SO2 (PHILIPS) O3 (RENDIX) NOX (TECO) CO (RENDIX) AUTO AFM (ADA) CoH (RAC)	NEMF CONTRACTOR
BW40	22959	05454	47152	BIG CREEK	PRECIP GAUGE (F/P) PRECIP COLLECTOR (SANDAHO) TSP HIVOL (GEN. MET) COMP HIVOL (GEN. MET.)	NEMF CONTRACTOR
W07	22953	05702	47396	DOGS NEST EAST	TSP HIVOL (GEN. MET.) COMP. HI-VOL (GEN. MET.) PRECIP COLLECTOR (SANDAHO) PRECIP GAUGE (F/P)	NEMF CONTRACTOR
W13	22961 ----- 22056	05641	47383	PORT DOVER	SO2 (PHILIPS) DATA RECORDER WEST) --- TSP HI-VOL (GEN. MET.)	HYDRO C18/N09 MOE/WCR
WNW03	22871	05752	47398	NANTICOKE VILLAGE	SO2 (PHILIPS) DATA RECORDER (WEST) TRS (PHILIPS)	HYDRO C18/N09 NEMF CONTRACTOR
WNW19	22071	05597	47449	SIMCOE HORTICULTURAL	SO2 (TECO) O3 (RENDIX) NOX (TECO) COH (RAC)	MOE/WCR
WNW20	22872	05596	47485	BLOOMSBURG	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO C19/N09
NW03	22961	05758	47412	NANTICOKE NORTH	TSP HI-VOL (GEN. MET.) COMP. HI-VOL (GEN. MET.)	NEMF CONTRACTOR
NNW08	22881 ----- 22905	05744	47456	NANTICOKE ROAD	SO2 (PHILIPS) DATA RECORDER (WEST) --- TRS (PHILIPS) HC (BYRON)	HYDRO C19/N05 NEMF CONTRACTOR
NNW11	22882 ----- 22032	05712	47478	JARVIS	SO2 (PHILIPS) DATA RECORDER (WEST) --- TSP HI-VOL (GEN. MET.)	HYDRO C18/N09 MOE/WCR
NNW12	22883	05744	47499	JARVIS MET. TOWER	10 m WIND SPEED/DIR (RENDIX) 10 m TEMPERATURE (ROSEMONT) 30 m WIND SPEED/DIR (RENDIX) 85 m WIND SPEED/DIR (RENDIX) 85 m TEMPERATURE (ROSEMONT) 4 DATA RECORDERS (WEST)	HYDRO C19/N09
NNW15	22884	05717	47522	LIVINGSTON	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO C18/N09

Table 2 con't Station Location and Description

GEOGRAPHICAL ID	AQUIS ID	E-W UTM#	N-S UTM#	SITE NAME	INSTRUMENT, COMPLIMENT AND NOTES	MAINTAINED BY
HNW18	22954	05654	47535	VILLA NOVA	TSP HI-VOL (GEN. MET.) PRECIP COLLECTOR (SANDAMO)	NEMP CONTRACTOR
HNW06	22963			STELCO NORTH	TSP HI-VOL(GEN. MET.) COMP HI-VOL (GEN. MET.)	NEMP CONTRACTOR
	22811				SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO C18/N08
N07	22906	05787	47458	SANDUSK	NOX (TECO)	NEMP CONTRACTOR
	22069				TSP HI-VOL (GEN. MET.)	MOE/WCR
N15	22812	05774	47535	GARNET	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO C18/N08
N17	22951	05768	47548	HAGERSVILLE SOUTH	TSP HI-VOL (GEN. MET.) COMP. HI-VOL (GEN. MET.)	NEMP CONTRACTOR
	22921				SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO C18/N08
NNE05	22904	05794	47434	WALPOLE SOUTH	TRS (PHILIPS) HC (BYRON) TSP HI-VOL (GEN. MET.) COMP. HI-VOL (GEN. MET.)	NEMP CONTRACTORS
NNE09	22822	05830	47463	DRY CREEK	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO C18/N08
NNE10	22086	05821	47472	CHEAPSIDE	SO2 (TECO) NOX (TECO) COLL (RAC) TSP HI-VOL	MOE/WCR
NNE10	22903	05821	47472	CHEAPSIDE	TRS (PHILIPS) HC (BYRON) AUTO AFM (OCA)	NEMP CONTRACTOR
NNE16	22823	05872	47518	BALMORAL	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO C18/N08
NNE20	22825	05880	47561	PECEWSVILLE	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO C18/N08
NNE22	22960	05839	47600	DUFFERIN NORTH	TSP HI-VOL PRECIP COLLECTOR (SANDAMO)	NEMP CONTRACTOR
NNE39	22902	05914	47746	PINBROOK WEST	SO2 (PHILIPS) O3 (BENDIX) NOX (TECO) CO (BENDIX) TSP HI-VOL (GEN. MET.) COLL (RAC) PRECIP COLLECTOR (SANDAMO) PRECIP GAUGE (T/P)	NEMP CONTRACTOR

Table 2 con't Station Location and Description

GEOGRAPHICAL ID	AQUIS ID	E-W UTM	N-S UTM	SITE NAME	INSTRUMENT, COMPLIMENT AND NOTES	MAINTAINED BY
NF07	22962	05818	47443	DRY CREEK WEST	ACOUSTIC SOUNDER	NEMF CONTRACTOR
NF16	22957	05886	47509	FISHERVILLE NORTH	TSP HI-VOL(GEN. MET.) COMP. HI-VOL (GEN. MET.)	NEMF CONTRACTOR
NF19	22832	05935	47489	KOHLER ROAD	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO C19/NOS
NF27	22956	06026	47527	CANFIELD SOUTH	TSP HI-VOL (GEN. MET.) PRECIP COLLECTOR (SANDAMO) PRECIP GAUGE (F/P)	NEMF CONTRACTOR
NF41	22958	06109	47607	CANBORO EAST	TSP HI-VOL (GEN. MET.) PRECIP COLLECTOR (SANDAMO)	NEMF CONTRACTOR
ENF11	22841	05870	47434	SELKIRK	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO C19/NOS
	22831				TSP HI-VOL (GEN. MET.)	MOE/WCR
ENF17	22955	05934	47441	RAINHAM CENTRE SOUTH	TSP HI-VOL (GEN. MET.) COMP. HI-VOL (GEN. MET.)	NEMF CONTRACTOR
ENF18	22842	05950	47445	RAINHAM CENTRE	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO C19/NOS
E04	22952	05822	47388	PEACOCK POINT PARK	TSP HI-VOL (GEN. MET.) COMP HI-VOL (GEN. MET.)	NEMF CONTRACTOR
E05	22851	05831	47380	PEACOCK POINT	SO2 (PHILIPS) DATA RECORDER (WEST)	HYDRO C19/NOS

Table 3

Details of SO2 Exceedance Events for 1982

Date	Time (EST)	Monitor	Average SO2 (ppb)	Wind Speed (km/hr)	Wind Dir	Station Load (MW)
February 10	1200	NE19	436	23	WSW	3923
July 14	1600	NNE10	270	7	SSW	2432
		NNE16	352			
		NNE20	280			
	1700	NNE16	417	5	SSW	2433
		NNE20	300			
July 16	1500	NNE20	270	13	SSW	2915
September 17	1600	NNE09	273	14	SSW	2932
September 30	1400	NNE16	256	13	S	1459
November 11	2400	NNE05	280	45	SSW	1149

Hourly AQC for SO2 is 250 ppb
Wind data is from the 85 m level of Jarvis meteorological tower

Table 4

Exceedances of the Hourly SO2 AQC by Station - 1975 to 1982

Station	1975	1976	1977	1978	1979	1980	1981	1982
N07	1	3	0	2	2	0	3	0
N15	0	0	0	0	0	1	1	0
NNE05	-	-	-	0	0	2	2	1
NNE09	4	4	3	6	1	1	4	1
NNE16	4	4	1	2	1	2	1	3
NNE17	1	0	3	-	-	-	-	-
NNE20	-	-	-	0	0	1	0	3
NE10	1	1	0	0	-	-	-	-
NE19	0	0	0	0	0	0	0	1
ENE11	0	0	0	0	0	0	0	0
ENE18	0	0	0	0	0	0	0	0
E05	0	0	0	0	1	0	1	0
W13	0	0	0	1	0	0	0	0
WNW03	0	0	0	0	1	0	0	0
WNW20	0	2	0	0	0	0	0	0
NNW08	0	3	3	2	1	0	2	0
NNW11	0	1	1	0	1	0	0	0
NNW15	0	2	1	1	0	0	0	0
SW37	-	-	-	0	0	0	0	0
NNE39	-	-	-	0	0	0	1	0
WNW19	0	0	0	0	0	0	0	0
NNE10	0	0	0	6	3	1	4	1
	11	20	12	20	11	8	19	10

- monitor not in operation
Hourly AQC for SO2 is 250 ppb

Table 5

Sulfur Dioxide (SO2) Data Summary by Station

STATION ID	ARITHMETIC MEAN	MAXIMUM	CONCENTRATION (ppb) NOT EXCEEDED DURING A GIVEN % OF HOURS				# OF HOURS MONITORING	% OF VALID DATA	NUMBER OF EXCEEDANCES	DAILY MAX
			10%	50%	90%	99%				
N07	5	248	0	2	14	41	8760	91.11	0	26
N15	5	231	0	2	14	45	8760	80.13	0	37
NNE05	7	280	0	3	18	46	8760	94.95	1	41
NNE09	6	273	0	2	16	47	8760	85.14	1	45
NNE16	7	417	0	3	17	61	8760	91.40	3	44
NNE20	6	300	0	2	14	52	8760	85.82	3	41
NE19	5	436	0	2	14	40	8760	86.38	1	49
ENE11	5	124	0	2	13	35	8760	87.31	0	38
ENE10	6	110	0	3	15	38	8760	88.46	0	37
E05	4	96	0	2	11	31	8760	70.25	0	22
W13	4	214	0	2	11	33	8760	91.96	0	40
WNW03	5	212	0	2	15	44	8760	79.20	0	43
WNW20	5	236	0	2	13	31	8760	91.00	0	25
NNW08	4	228	0	1	11	35	8760	85.25	0	31
NNW11	5	221	0	2	13	39	8760	89.21	0	33
NNW15	4	176	0	2	12	37	8760	85.63	0	30
WNW19	4	220	0	0	10	30	8607	96.61	0	28
NNE10	5	270	0	0	20	40	8628	89.72	1	37
SW37	5	113	0	2	12	33	8544	98.88	0	32
NNE39	6	141	0	3	15	46	7509	97.18	0	47

concentrations are in ppb
hourly AQC for SO2 is 250 ppb
daily AQC for SO2 is 100 ppb

Table 6

Ozone (03) Data Summary by Station

Station Id	Year	Conc (ppb) not exceeded during given % of hours				Maximum conc	Annual avg	% Valid Data	# Monitoring Hours	# Exceedances of AQC
		10%	50%	90%	99%					
	1979	13	27	53	89	140	30	67.5	5917	86
SW37	1980	13	29	60	95	123	33	87.4	7678	225
	1981	12	28	55	90	129	31	91.9	8323	159
	1982	14	32	58	86	114	34	93.8	8624	131
	1979	9	25	46	75	118	27	82.4	6010	34
NNE39	1980	7	22	41	69	102	24	74.0	6496	15
	1981	6	23	43	75	103	24	96.2	8627	44
	1982	7	24	43	67	89	25	97.3	8505	9
	1979	9	26	50	82	148	28	95.8	8394	96
WNW19	1980	9	24	46	75	99	26	93.0	8169	45
	1981	10	26	50	89	111	29	96.2	8627	138
	1982	12	30	56	83	115	34	96.5	8613	122

Values are in ppb
Hourly AQC for 03 is 80 ppb

Table 7

Nitrogen Dioxide (NO2) Data Summary by Station

Station Id	Year	Conc (ppb) not exceeded during given % of hours				Maximum conc	Annual avg	% Valid Data	# Monitoring Hours	# Exceedances of AQC
		10%	50%	90%	99%					
	1979	2	7	21	44	79	10	78.3	5543	0
SW37	1980	2	6	14	25	52	7	67.9	6509	0
	1981	2	6	15	31	58	7	N/A	7569	0
	1982	2	6	15	28	50	7	97.4	8621	0
	1979	2	8	23	47	83	11	93.8	8338	0
NNE39	1980	2	7	21	38	63	10	98.9	7284	0
	1981	1	7	21	47	74	10	N/A	6344	0
	1982	3	7	21	42	71	10	97.2	8327	0
	1979	1	7	18	30	57	8	96.9	4840	0
N07	1980	2	8	17	30	57	9	58.4	7248	0
	1981	1	6	17	33	66	8	N/A	4930	0
	1982	2	8	20	37	70	10	54.9	7471	0
	1979	0	10	20	50	130	13	97.3	8375	0
NNE10	1980	0	10	20	40	60	8	97.8	7745	0
	1981	0	10	20	40	100	10	98.9	8760	0
	1982	0	10	20	40	90	7	73.9	8702	0
	1979	0	10	20	40	80	10	98.7	8686	0
WNW19	1980	0	10	20	40	90	12	96.3	8763	0
	1981	0	10	20	40	90	14	92.0	6685	0
	1982	0	10	20	40	100	10	91.9	8617	0

Values are in ppb
Hourly AQC for NO2 is 200 ppb

Table 8

Total Reduced Sulphur (TRS) Data Summary by Station

Station Id	Year	Conc (ppb) not exceeded during given % of hours				Maximum conc	Annual avg	% Valid Data	# Monitoring Hours
		10%	50%	90%	99%				
NNE10	1979	0	0	1	3	25	0.4	69.2	5030
	1980	0	0	2	3	14	0.5	76.0	3886
	1981	0	0	2	3	7	0.4	92.3	4791
	1982	0	0	2	4	9	0.6	90.7	7623
NNE05	1979	0	0	1	3	60	0.4	74.3	5955
	1980	0	0	1	3	9	0.3	67.9	4462
	1981	0	0	1	3	30	0.3	95.1	7801
	1982	0	0	1	3	12	0.2	99.9	7685
NNW08	1979	0	0	1	3	8	0.3	49.2	3952
	1980	0	0	1	3	34	0.3	71.3	5793
	1981	0	0	1	2	7	0.3	97.2	7618
	1982	0	0	1	3	7	0.3	93.1	7446
WNW03	1979	N/O	N/O	N/O	N/O	N/O	N/O	N/O	N/O
	1980	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	1981	0	0	2	6	36	0.6	97.2	7714
	1982	0	0	2	5	46	0.5	83.2	7526

Values are in ppb
N/O Not Operating
N/A Not Available - station operated only part of the year.

Table 9

Details of TRS Events Exceeding 8 ppb* for 1982

Date	Time (EST)	Monitor	Average TRS (ppb)	Wind Speed (km/hr)	Wind Dir
January 20	0200	NNE10	9	7	W
	0300	NNE10	9	11	W
March 31	2300	WNW03	9	13	SSW
	2400	WNW03	9	17	SW
April 24	2400	WNW03	46	12	SW
25	0200	WNW03	16	9	SSW
		NNE05	12		
	0500	WNW03	10	7	SSW
29	2000	NNE10	9	calm	calm
August 25	2400	WNW03	16	10	SW
26	0100	WNW03	17	9	SW
November 7	2400	WNW03	10	24	SSW
23	1200	NNE10	9	13	SSW
	1300	NNE10	9	17	SSW
	1400	NNE10	9	12	SSW
December 28	0100	WNW03	18	calm	calm

* arbitrarily chosen
Wind data is from the 10 m level of Jarvis meteorological tower

Table 10

Carbon Monoxide (CO) Data Summary by Station

Station Id	Year	Conc (ppm) not exceeded during given % of hours				Maximum conc	Annual avg	% Valid Data	# Monitoring Hours	# Exceedances of AQC
		10%	50%	90%	99%					
SW37	1979	0	0	0	1	6	0.1	90.5	6584	0
	1980	0	0	0	1	2	0.1	90.7	7971	0
	1981	0	0	1	1	2	0.2	94.7	8427	0
	1982	0	0	1	2	4	0.1	95.9	8623	0
NNE39	1979	0	0	1	1	4	0.1	88.4	7089	0
	1980	0	0	0	1	3	0.1	88.7	7176	0
	1981	0	0	0	1	2	0.1	98.9	8713	0
	1982	0	0	0	1	2	0.1	99.9	8275	0

Values are in ppm
Hourly AQC for CO is 30 ppm

Table 11

Methane (CH4) Data Summary by Station

Station Id	Year	Conc (1ppm) not exceeded during given % of hours				Maximum conc	Annual avg	% Valid Data	# Monitoring Hours
		10%	50%	90%	99%				
	1979	14	16	28	41	46	18	55.2	4057
NNE10	1980	13	14	16	18	28	14	78.3	6921
	1981	13	15	16	19	25	15	91.1	8352
	1982	13	14	16	20	40	15	99.9	8140
	1979	11	14	18	39	88	15	81.9	6012
NNE05	1980	12	13	15	29	59	14	81.0	7118
	1981	12	14	16	21	55	14	98.2	7937
	1982	13	15	18	23	34	16	91.0	7355
	1979	16	19	22	26	34	19	76.8	2820
NNW08	1980	12	15	17	21	32	15	78.3	6874
	1981	13	15	17	22	39	15	92.9	8258
	1982	12	15	18	22	57	15	73.8	6712

Values are in .1 ppm

Table 12

Non-Methane Hydrocarbon Data Summary by Station

Station Id	Year	Conc (1 ppm) not exceeded during given % of hours				Maximum conc	Annual avg	% Valid Data	# Monitoring Hours
		10%	50%	90%	99%				
	1979	0	2	37	140	180	12	57.2	3776
NNE10	1980	1	3	6	9	125	4	74.2	6521
	1981	2	7	10	14	36	7	89.9	8224
	1982	1	6	11	16	32	6	93.0	8245
	1979	4	6	11	16	38	7	81.0	5948
NNE05	1980	2	5	9	14	77	6	77.8	6832
	1981	3	5	8	11	31	5	97.1	7998
	1982	3	5	8	11	16	5	83.1	7301
	1979	4	6	8	14	51	6	76.8	2819
NNW08	1980	4	7	9	11	18	7	76.4	6710
	1981	6	8	10	12	19	8	95.8	8253
	1982	2	5	11	13	17	6	75.7	6546

Values are in .1 ppm

Table 13

Total Suspended Particulates (TSP) Data Summary By Station

STATION ID	GEOMETRIC MEAN	MAXIMUM	CONCENTRATION NOT EXCEEDED DURING A GIVEN % OF SAMPLE DAYS 10%	50%	90%	99%	STANDARD DEVIATION	NUMBER OF SAMPLES	NUMBER OF EXCEEDANCES
NNE39	38	94	22	37	65	77	1.5	51	0
NNE05	36	170	22	36	62	79	1.6	57	1
N17	41	256	23	39	76	148	1.7	60	2
E04	31	74	19	30	53	72	1.5	53	0
W07	31	92	17	30	60	78	1.5	107	0
NNW18	36	324	21	34	62	183	1.7	60	2
ENE17	32	153	19	33	51	68	1.6	54	1
NE27	40	101	23	40	64	75	1.5	50	0
NE16	39	123	21	36	81	95	1.6	59	1
NE41	38	116	20	36	72	101	1.6	57	0
SW40	33	81	19	34	53	78	1.5	59	0
NNE22	39	95	26	38	67	88	1.5	57	0
NW03	36	134	21	36	65	106	1.6	116	1
NNW06	36	143	21	34	67	110	1.7	117	2

Concentrations are in ug/m3
Daily AQC for TSP is 120 ug/m3

Table 14

Details of TSP Exceedance Events for 1982

Date	Monitor	Average TSP (ug/m3)	Wind Speed (km/hr)	Prevailing Wind Direction
January 11	N17	148	27	west-northwesterly
	NNW18	324		
	ENE17	153		
	NE16	123		
January 17	NNW18	183	26	westerly
May 5	NW03	134	8	southeasterly
May 14	NNW06	143	7	southerly
July 16	NNW06	127	7	southerly
September 8	N17	256	calm	calm
September 14	NNE05	170	9	southerly

Daily AQC for TSP is 120 ug/m3

Table 15

Annual and Seasonal Distribution of Particulates

		SO4	NO3	Ca	Mg	CT
Winter	1979	3.2 (13)	4.0 (13)	0.78 (15)	0.17 (16)	2.7 (18)
	1980	5.4 (48)	3.8 (48)	0.62 (48)	0.22 (48)	3.9 (40)
	1981	6.1 (46)	3.8 (45)	0.73 (46)	0.19 (46)	4.3 (52)
	1982	4.9 (33)	2.2 (33)	0.77 (33)	0.21 (33)	3.4 (31)
Spring	1979	4.5 (28)	2.8 (28)	0.76 (24)	0.20 (24)	3.1 (23)
	1980	4.7 (40)	3.1 (40)	1.11 (40)	0.32 (40)	3.7 (42)
	1981	5.0 (47)	3.2 (47)	1.56 (47)	0.47 (47)	5.0 (51)
	1982	5.2 (47)	2.8 (47)	0.99 (47)	0.30 (47)	4.6 (45)
Summer	1979	7.2 (65)	1.3 (62)	0.78 (62)	0.15 (46)	6.4 (43)
	1980	7.5 (34)	2.5 (34)	0.86 (33)	0.19 (33)	6.7 (37
	1981	8.9 (50)	2.0 (50)	0.81 (50)	0.24 (50)	5.9 (50)
	1982	6.5 (43)	1.6 (43)	0.88 (42)	0.27 (42)	7.2 (43)
Fall	1979	4.7 (62)	2.4 (62)	0.43 (62)	0.25 (62)	4.3 (57)
	1980	3.0 (29)	2.5 (29)	0.94 (27)	0.19 (27)	3.8 (29)
	1981	4.7 (43)	2.9 (43)	0.96 (43)	0.30 (43)	4.9 (44)
	1982	3.3 (51)	2.1 (51)	0.74 (51)	0.22 (51)	5.2 (51)
Annual	1979	5.3	2.1	0.53	0.21	4.5
	1980	4.6	2.2	0.83	0.22	4.4
	1981	5.7	2.8	0.99	0.29	4.7
	1982	4.6	2.2	0.82	0.24	5.3

concentrations are in ug/m3
bracketed values indicate number of cases considered
values are expressed as geometric means
CT IS Total Carbon

Table 16

Distribution of Particulates According to Wind Direction

Parameter	Southerly Wind	Northerly Wind
SO4	5.7 (98)	3.1 (61)
NO3	2.3 (98)	1.9 (61)
Ca	0.88 (98)	0.78 (60)
Mg	0.26 (98)	0.24 (60)
CT	5.5 (96)	4.8 (60)

concentrations are in ug/m3
bracketed values indicate number of cases considered
values expressed are geometric means

Table 17

NEMP Precipitation Data - 1979 to 1982

Parameter	1979 mean	1980 mean	1981 mean	1982 mean
pH	4.0 (51)	4.1 (69)	4.1 (66)	4.1 (64)
SO4	5.8 (62)	4.9 (71)	5.2 (65)	4.0 (65)
N-NO3	0.83 (67)	0.65 (71)	0.67 (65)	0.55 (65)
Ca	0.71 (67)	0.54 (71)	0.45 (65)	0.39 (65)
Mg	0.19 (67)	0.14 (72)	0.10 (65)	0.09 (65)
K	0.12 (69)	0.08 (72)	0.06 (64)	0.06 (65)
Fe	0.07 (70)	0.05 (65)	0.07 (64)	0.11 (61)
Zn	0.09 (66)	0.10 (65)	0.01 (64)	0.01 (62)

concentrations are in MG/L
( ) number of samples
mean - volume weighted average
pH was converted to HF ion concentration, averaged, then converted back to pH.

FIGURE 1

MONITORING STATIONS IN NANTICOKE REGION

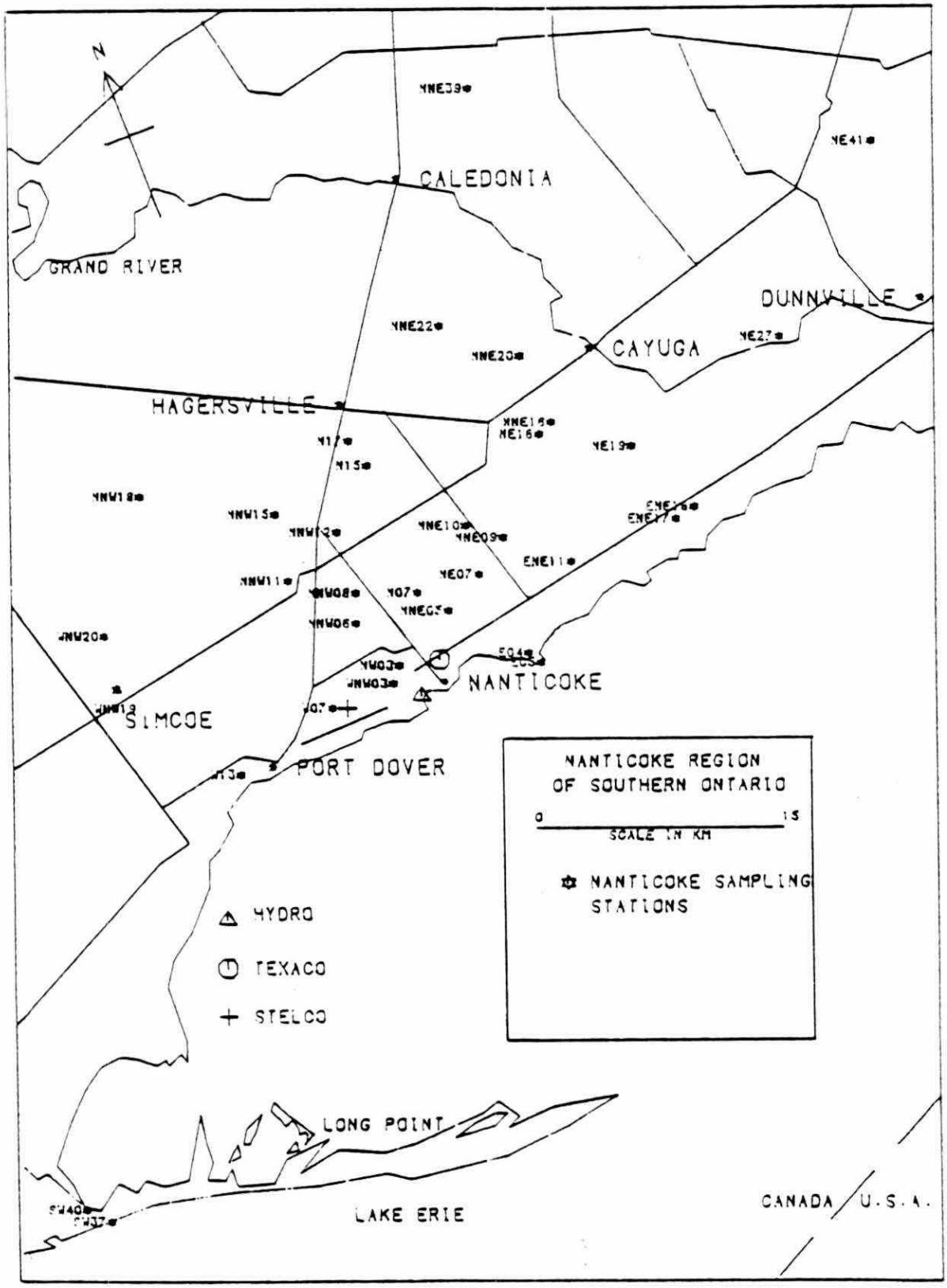


Figure 2

Annual Frequency Distribution of SO_2 for 1982

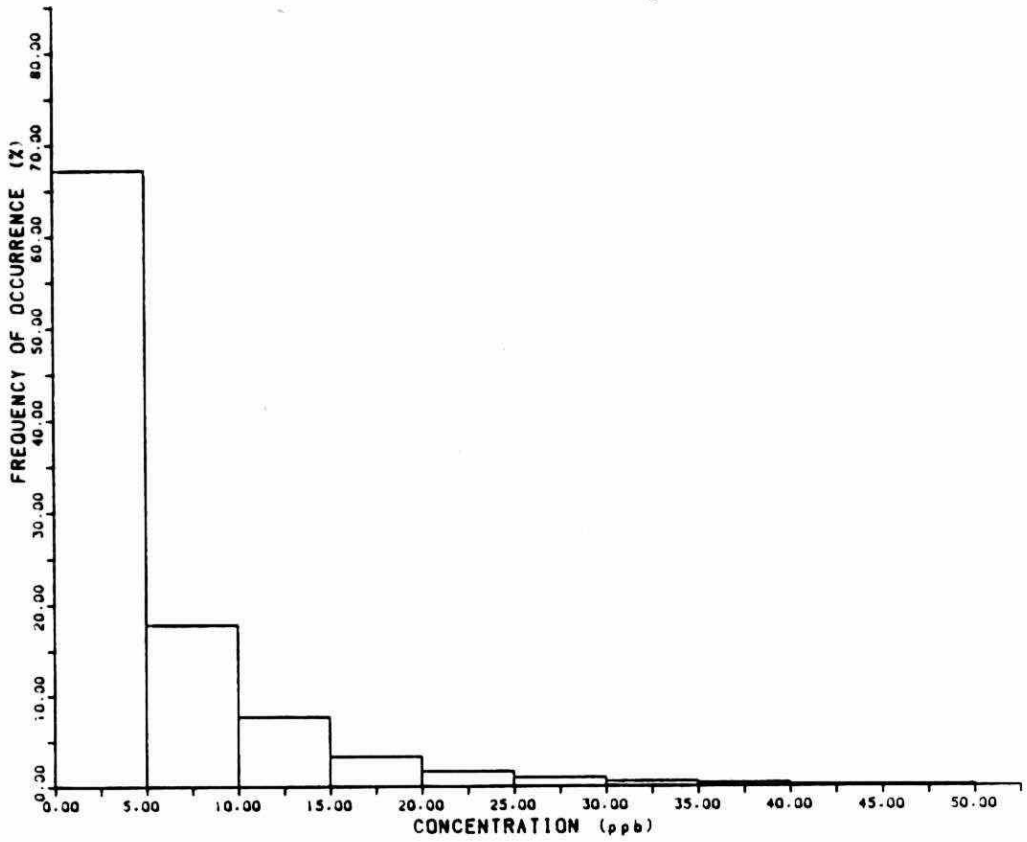
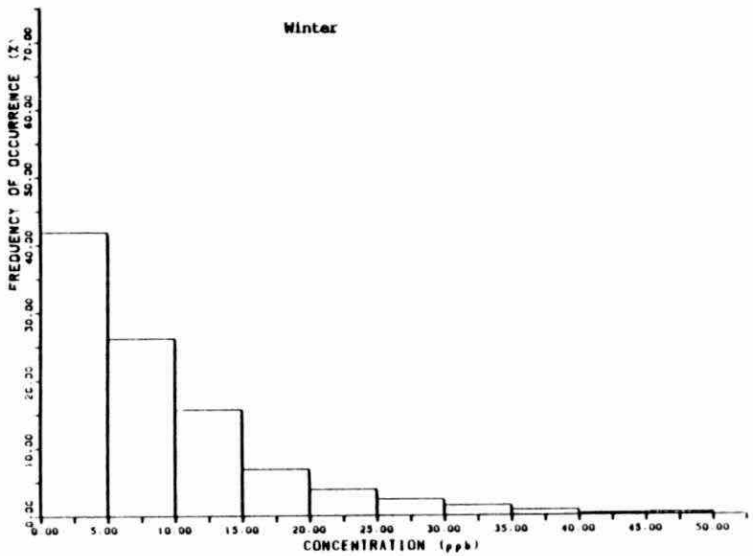
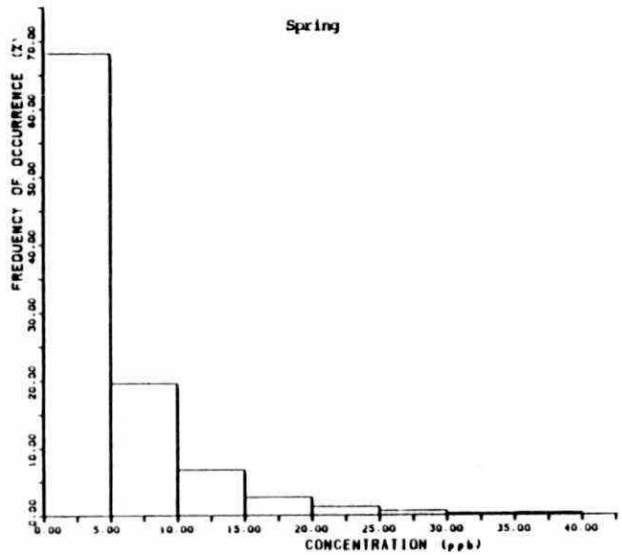
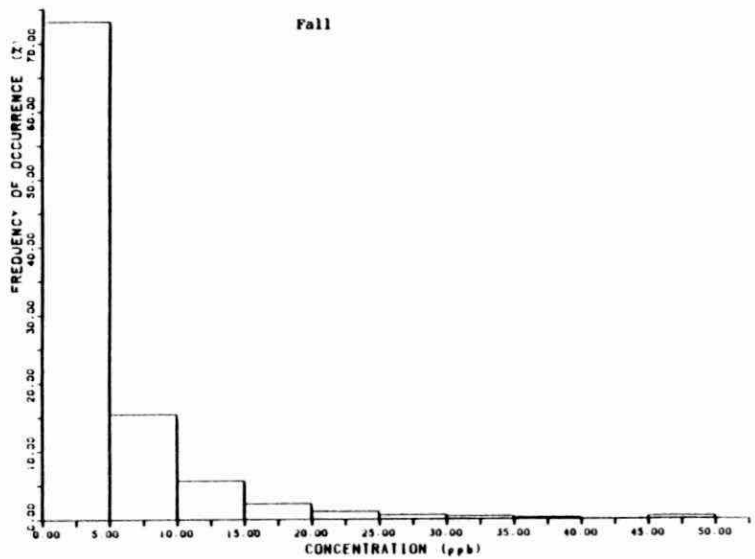


Figure 3 : Seasonal Frequency Distribution of SO_2 for 1982







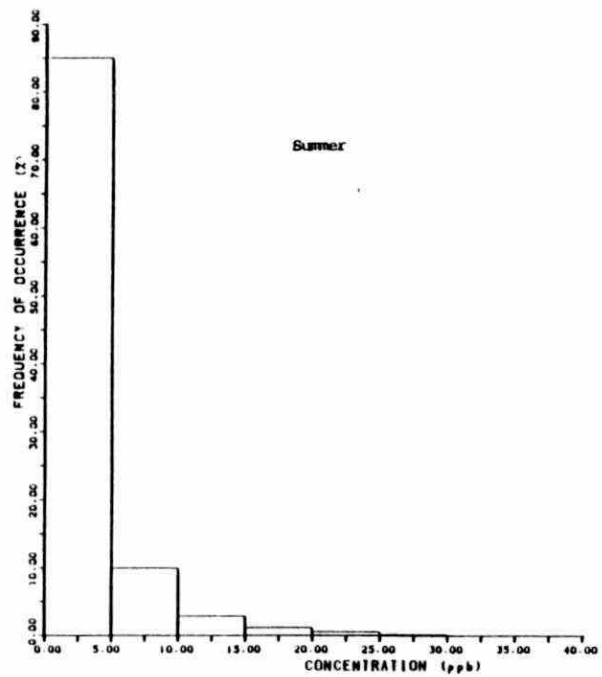


Figure 4

Annual Frequency Distribution of O_3 for 1982

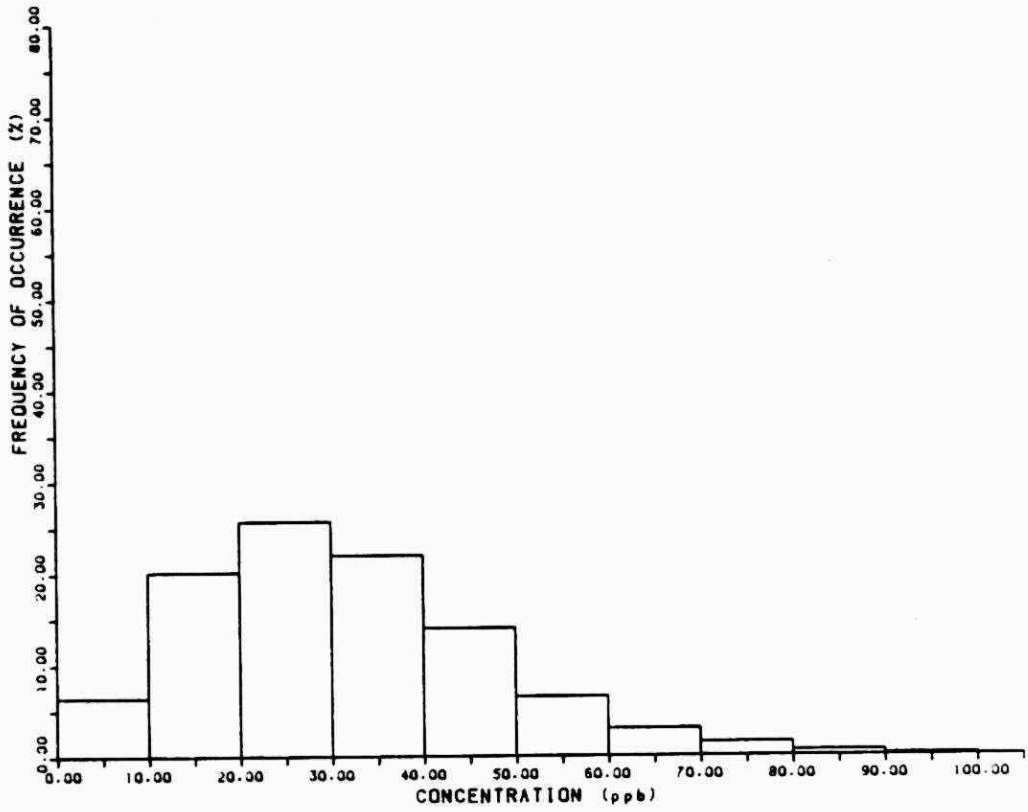
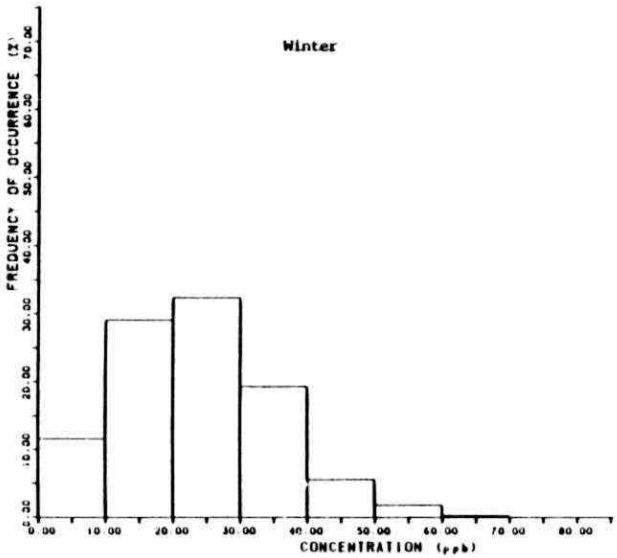
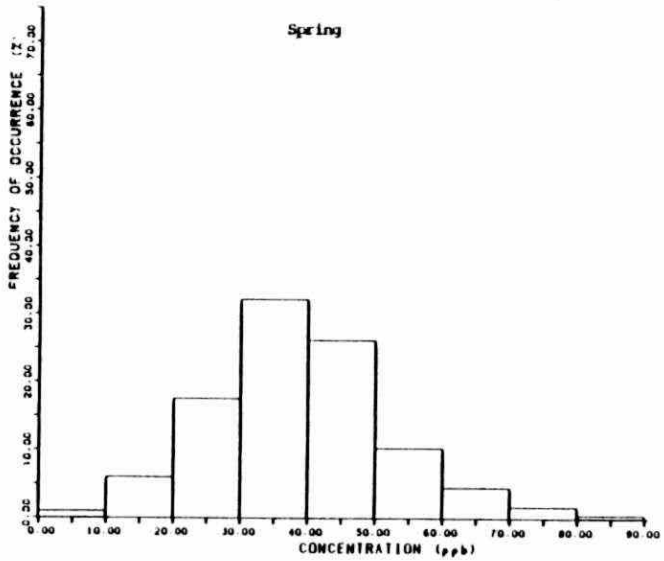
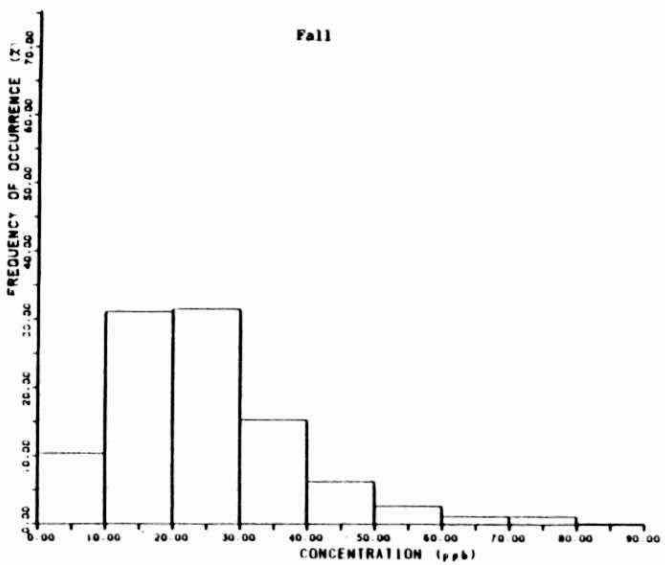


Figure 5 : Seasonal Frequency Distribution of O_3 for 1982







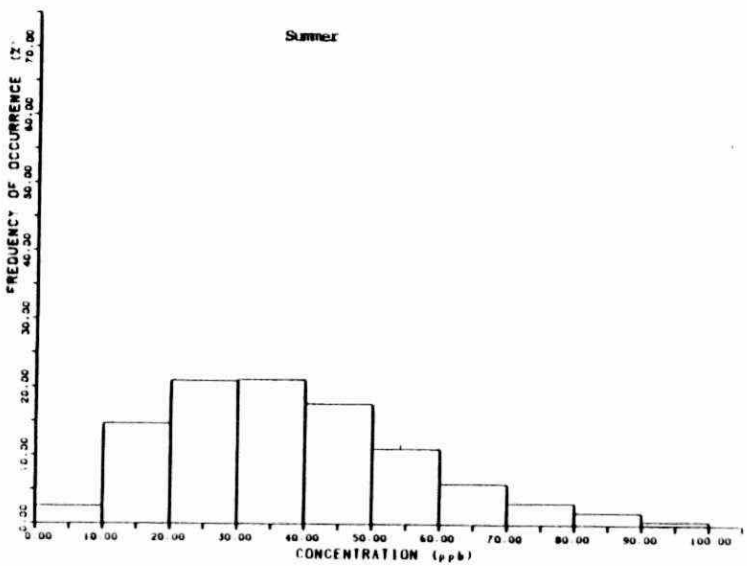
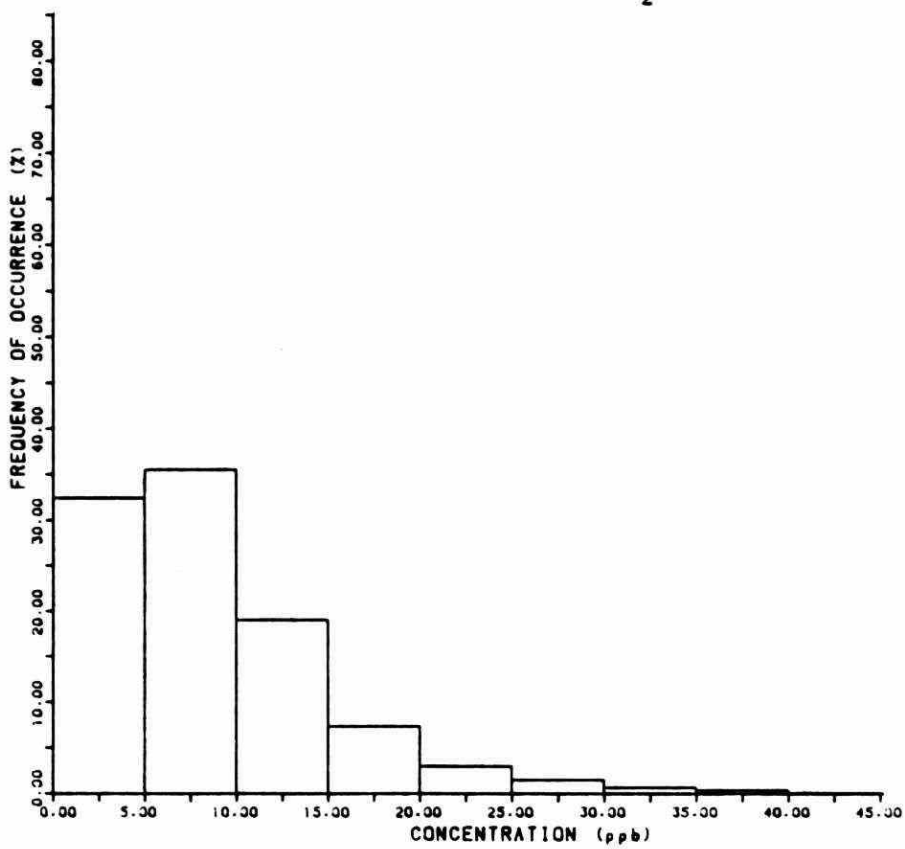


Figure 6

Annual Frequency Distribution of NO_2 for 1982



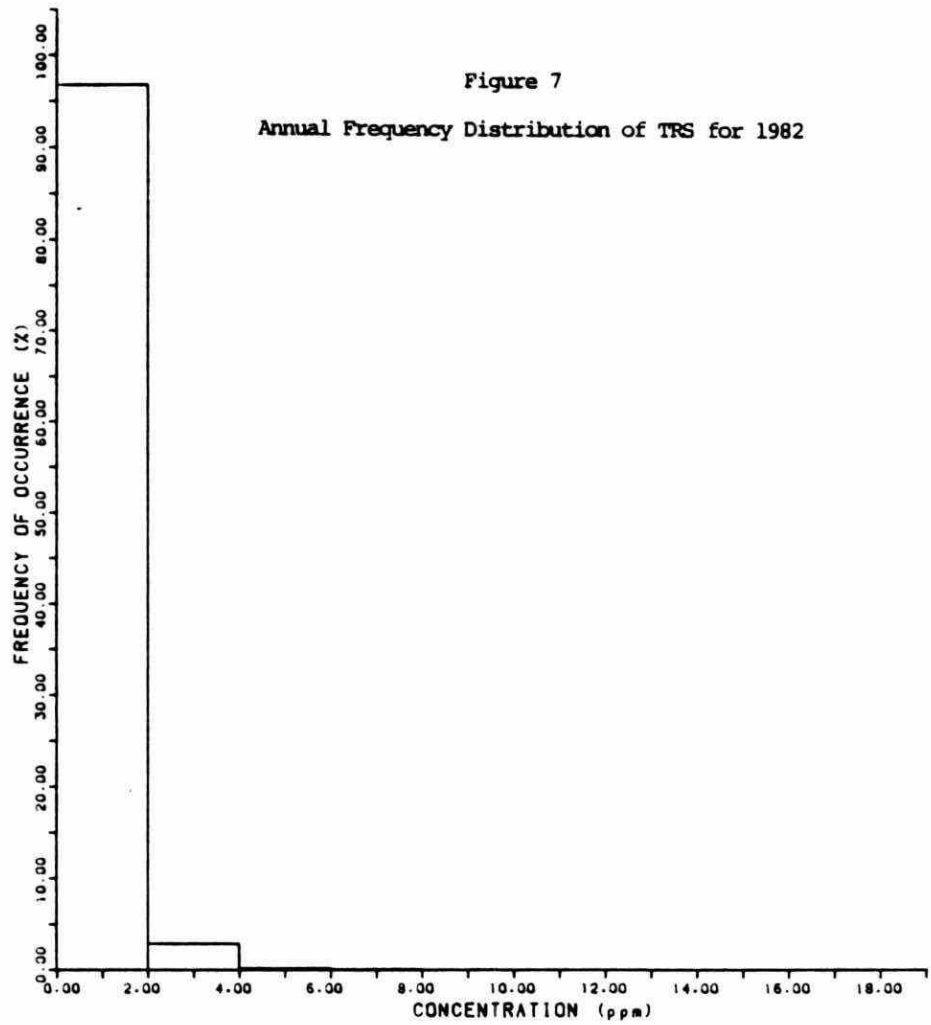


Figure 7

Annual Frequency Distribution of TRS for 1982

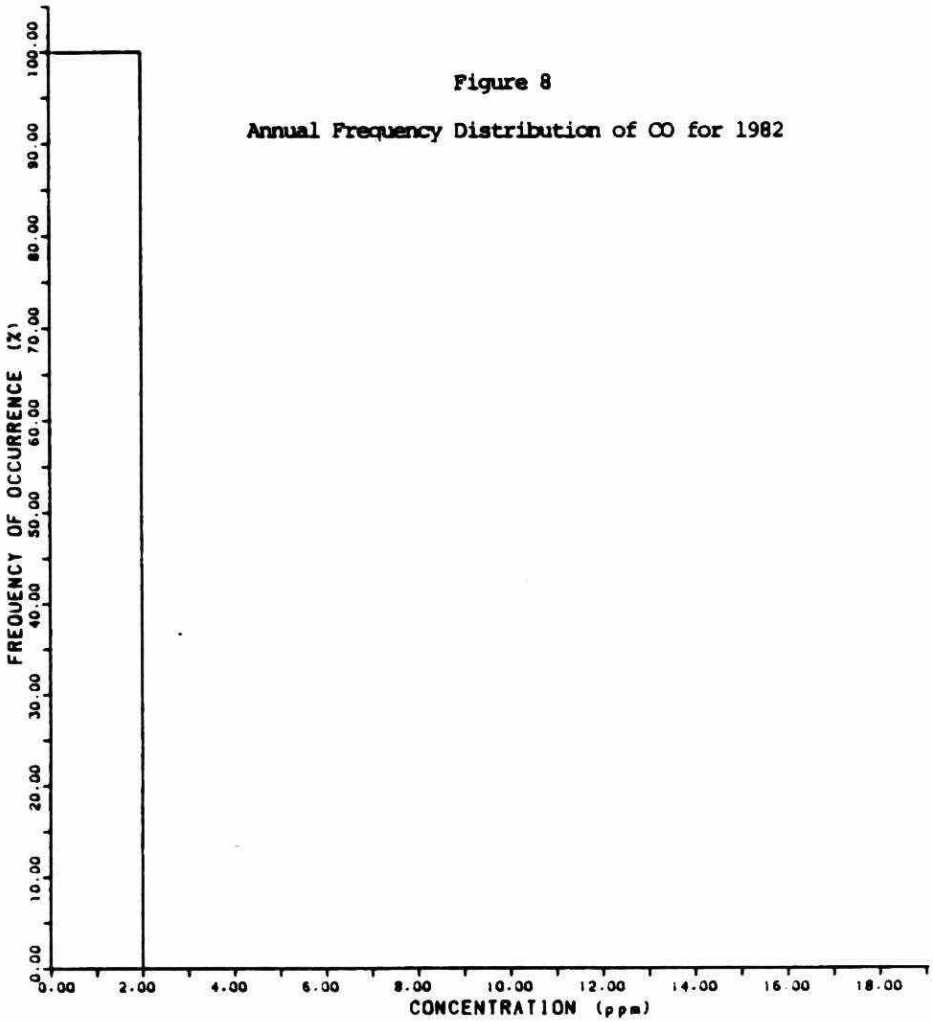


Figure 8

Annual Frequency Distribution of CO for 1982

Figure 9

Annual Frequency Distribution of CH_4 for 1982

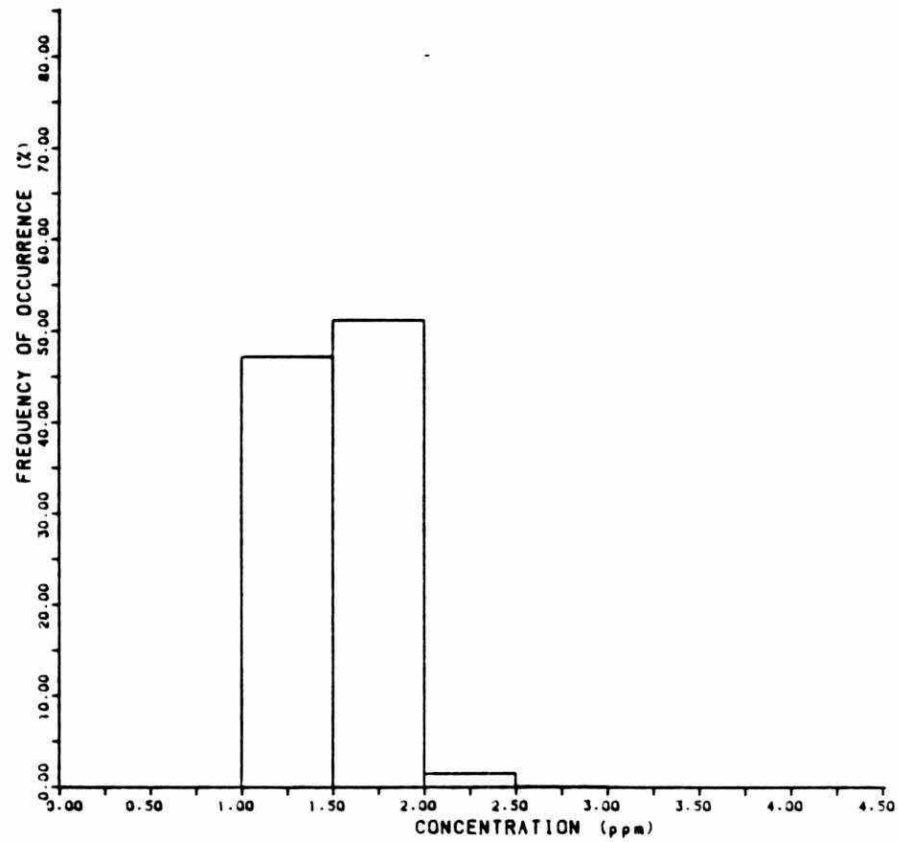


Figure 10

Annual Frequency Distribution of NMHC for 1982

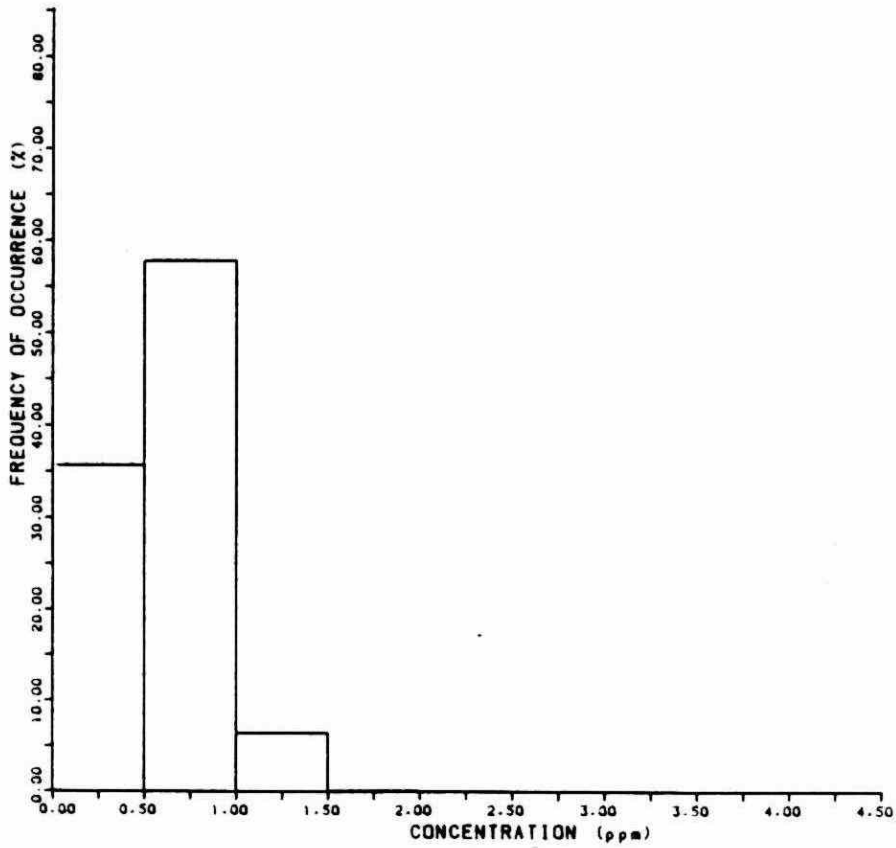


FIGURE 11

HI-VOL SAMPLING NETWORK

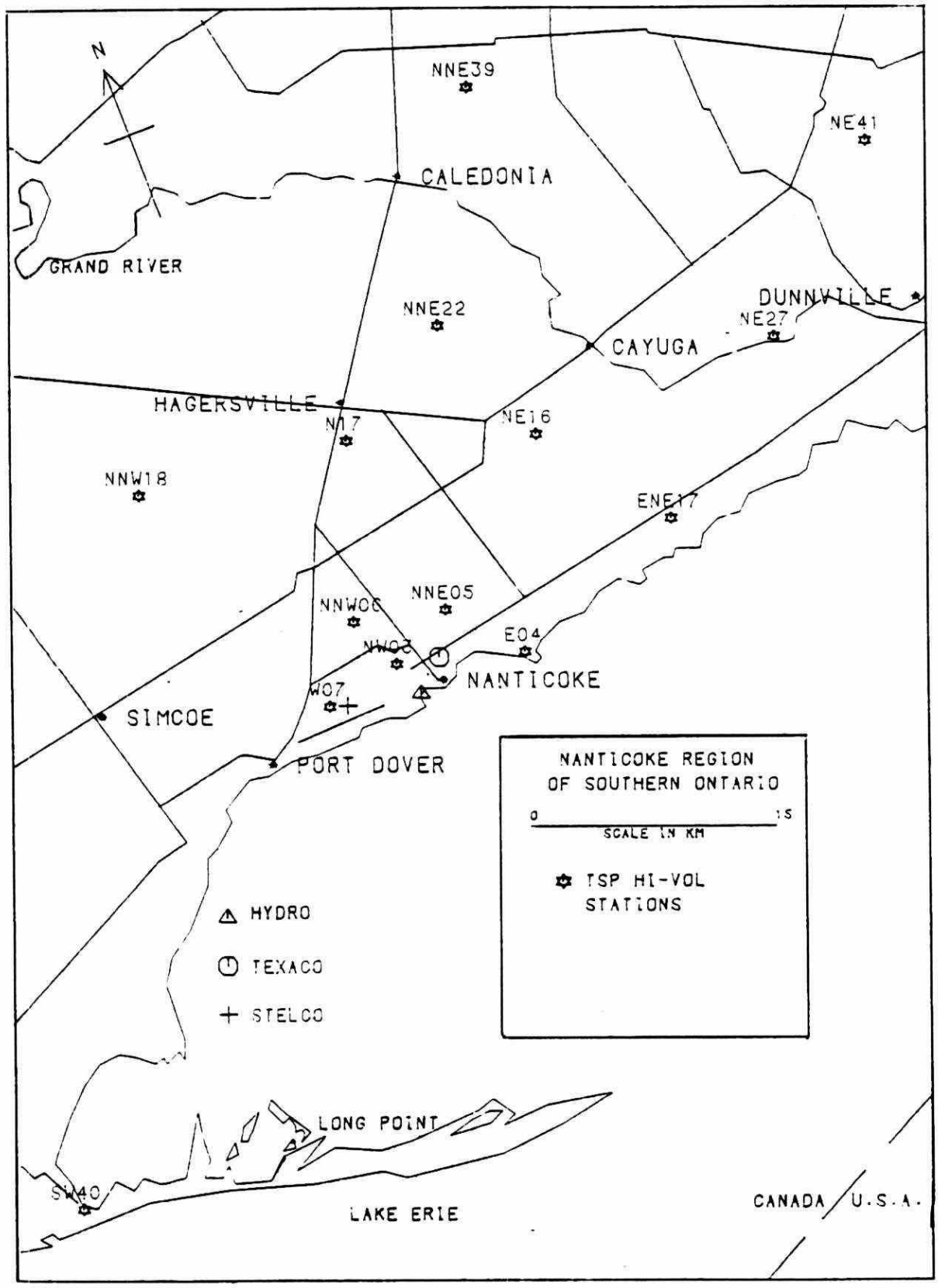


Figure 12

Annual Frequency Distribution of Tsp for 1982

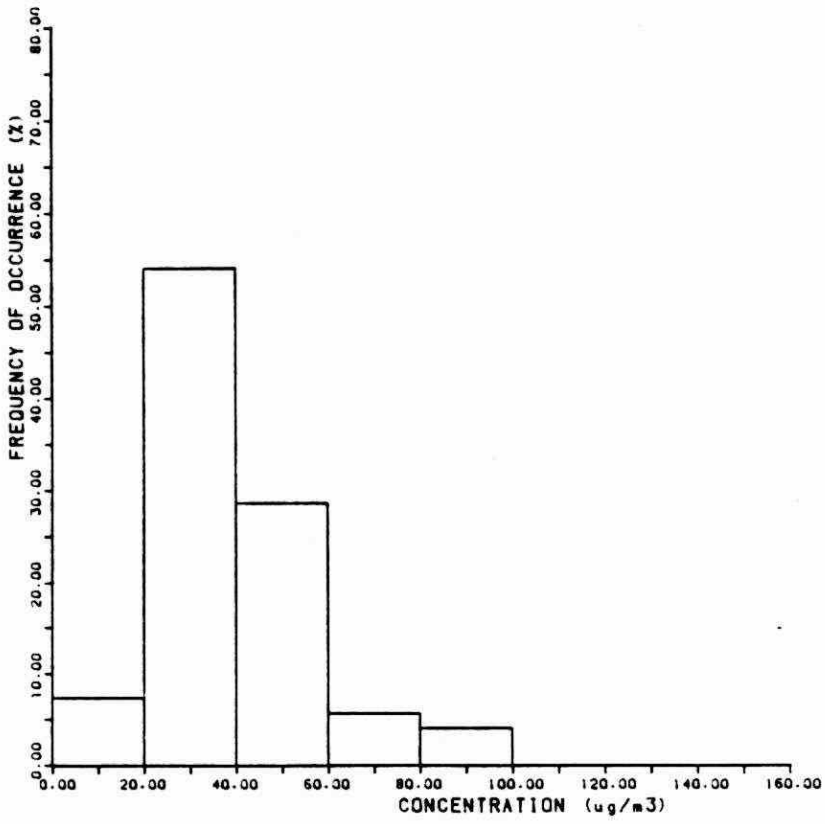


Figure 13 : Seasonal Frequency Distribution of Tsp for 1982

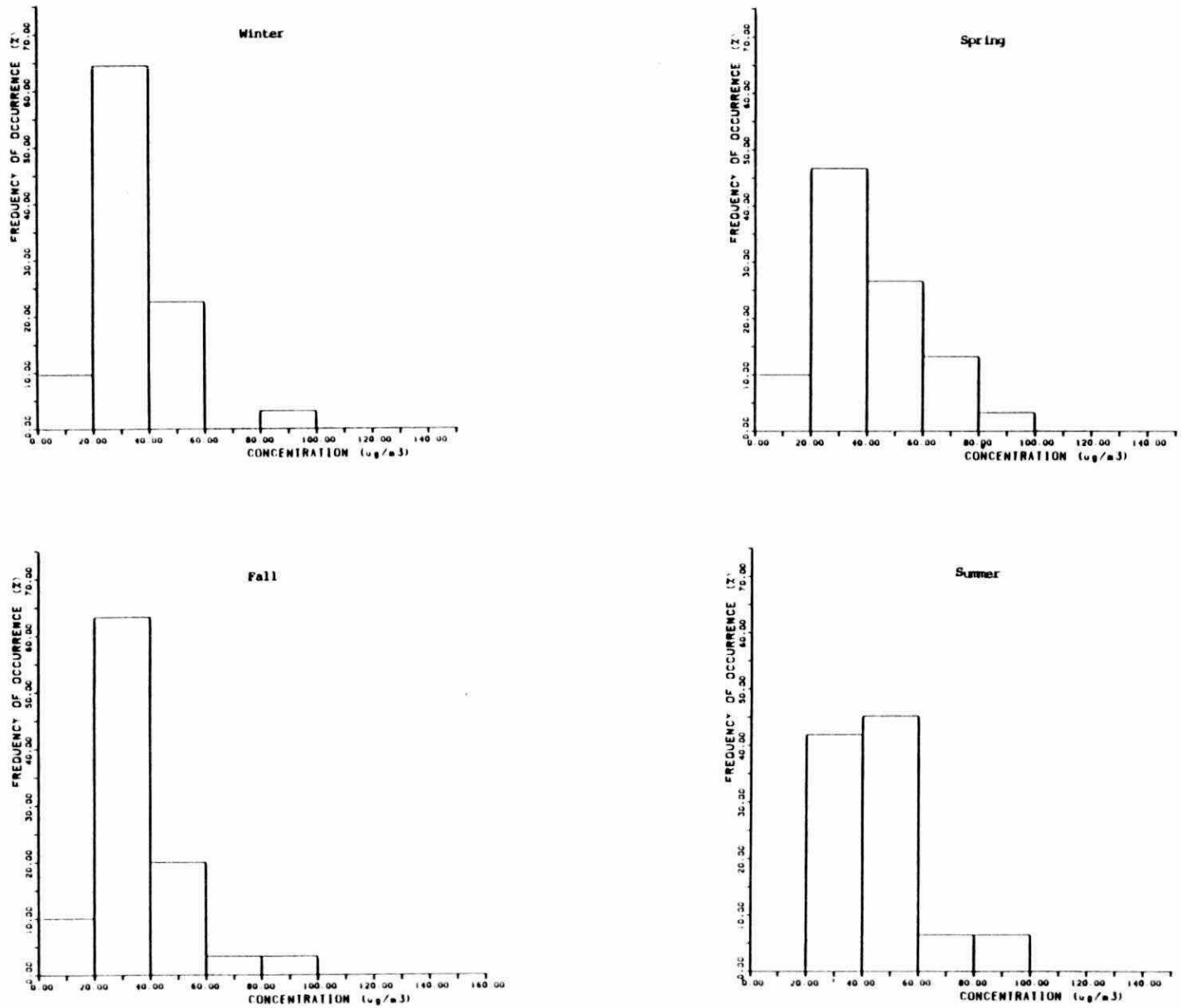


Figure 14

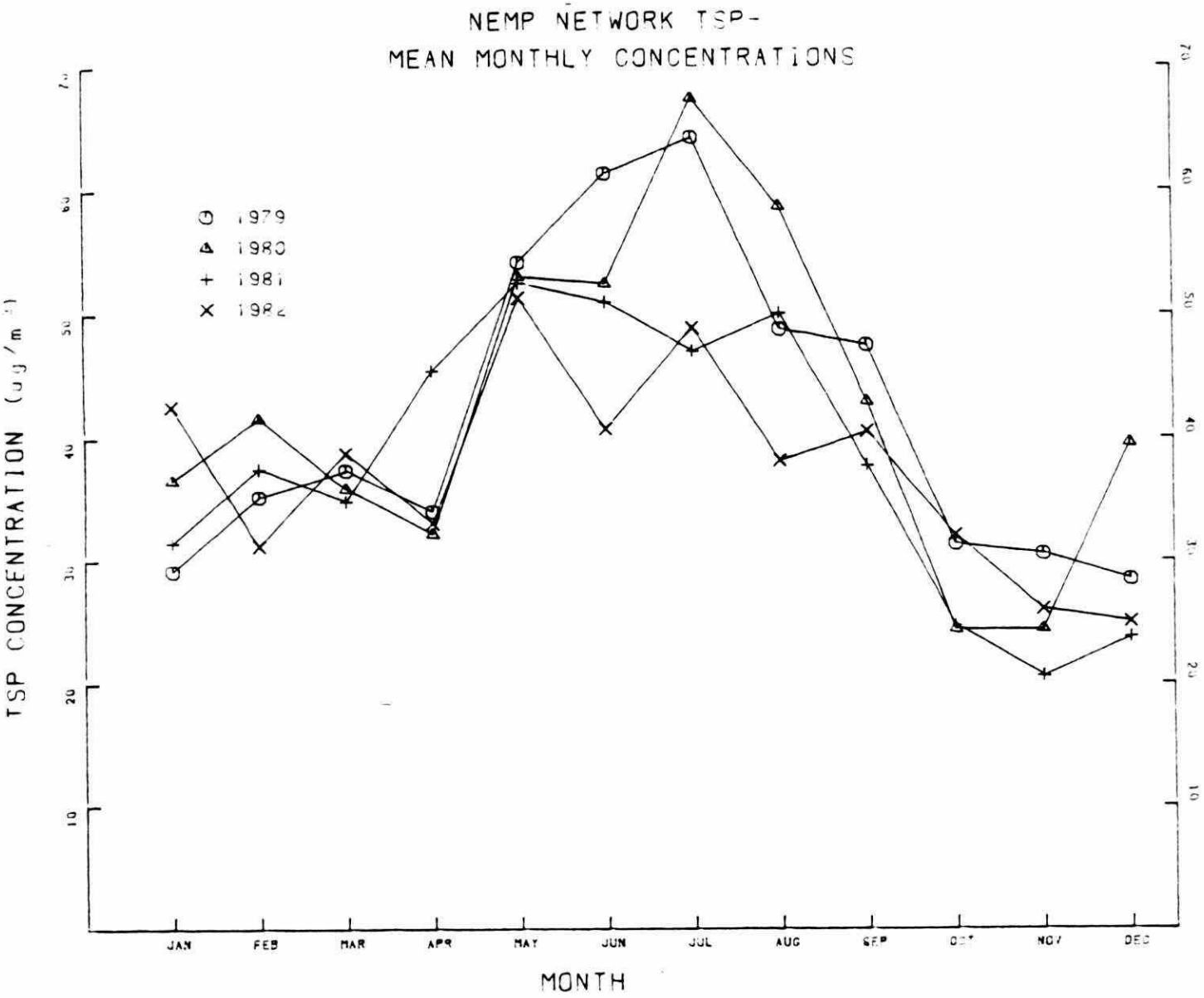
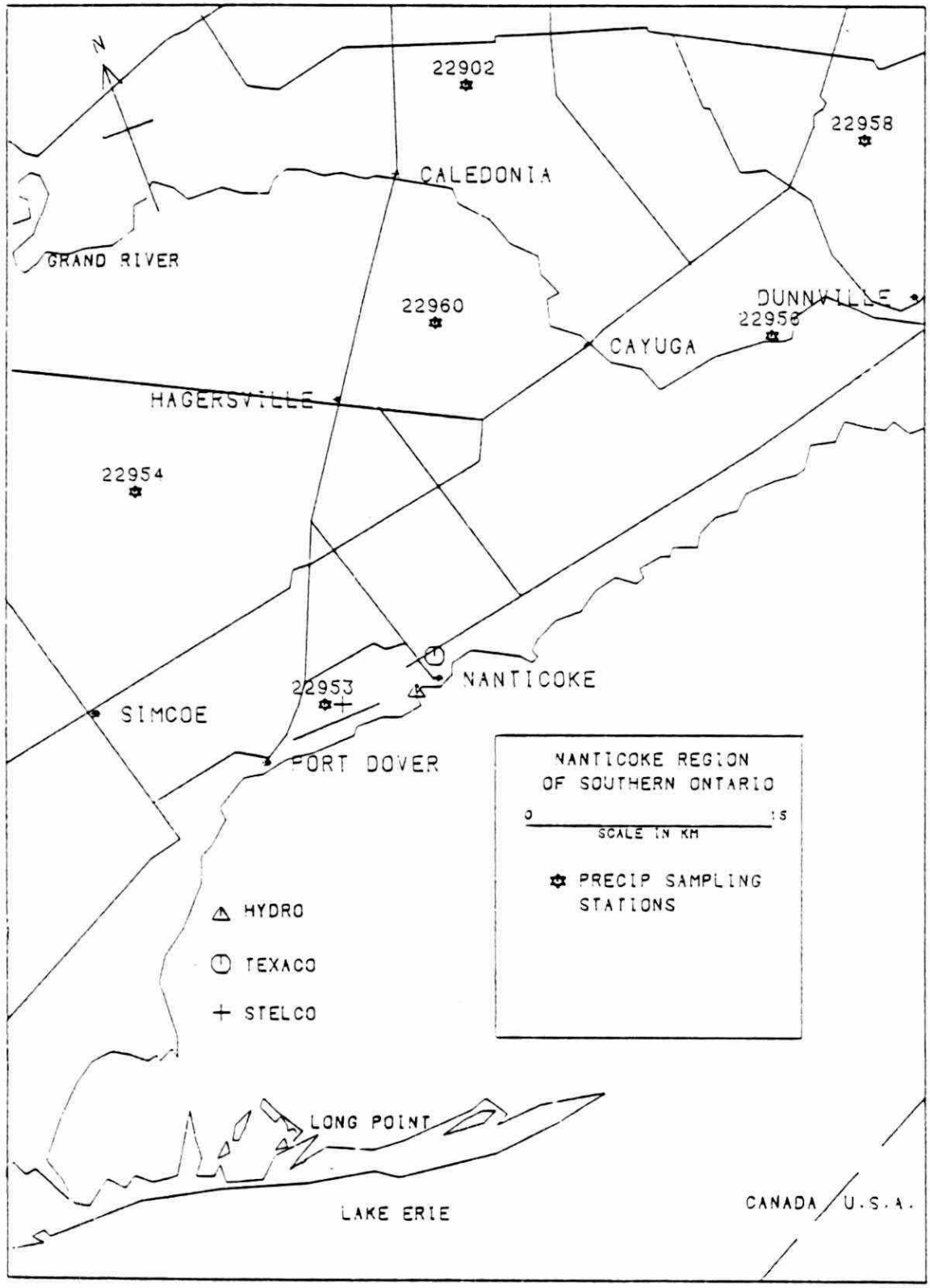

NEMP NETWORK TSP-
MEAN MONTHLY CONCENTRATIONS
1979
1980
1981
1982
TSP CONCENTRATION (ug/m³)
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
MONTH

FIGURE 15

PRECIPITATION SAMPLING NETWORK



Appendix 1

NEMP PARTICULATES DATA COLLECTED DURING JANUARY TO DECEMBER 1982

Sampling dates were chosen according to the daily wind direction. Wind directions were obtained from the 10 m level of the Jarvis meteorological tower. The most frequent direction during the 24 hour sampling period was used. (N/A) corresponds to invalid or missing data while (BDL) represents concentrations reported as below the detection limit. Geometric means were not calculated for elements which reported in excess of 25% of the data below the detection limit. If less than 25 % of the data are below the detection limit then one half the value of the detection limit was used to calculate the geometric mean. All concentrations are expressed in ug/m^3 and are listed station by station.

It should be noted here that, due to the interference between nitric acid and free carbon (during laboratory analysis), the free carbon results and the free carbon to total carbon ratios are somewhat less than expected.

1982 Particulate Trace Metal Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	ZN
22904	02/ 2/ 4	N	.145	1.970	.001	.002	.011	.580	.184	.028	.003	.091	.563	.065
22904	02/ 2/16	N	.162	.552	.001	.001	.026	.228	.182	.011	.005	.062	.808	.046
22904	02/ 3/24	S	.206	1.050	.001	.002	.031	.513	.229	.018	.003	.054	.798	.060
22904	82/ 4/17	SW	.216	.735	.001	.002	.007	.528	.195	.048	.002	.024	.805	.054
22904	02/ 5/ 5	S	.560	1.998	.001	.002	.051	.710	.606	.030	.002	.044	N/A	.037
22904	82/ 5/11	S	.461	1.392	.001	.002	.042	.450	.454	.020	.002	.047	N/A	.031
22904	02/ 5/23	N	.136	.650	.001	.002	.023	.140	.315	.007	.002	.061	N/A	.046
22904	02/ 6/22	S	.083	.380	.001	.002	.031	.200	.112	.020	.002	.030	N/A	.038
22904	02/ 6/28	S	.430	.677	.001	.002	.061	.340	.214	.020	.002	.087	N/A	.039
22904	82/ 7/ 4	NE	N/A	N/A	.001	N/A	.003	N/A	N/A	BDL	BDL	.002	1.246	.001
22904	02/ 7/16	S	.178	1.530	.001	BDL	.574	.496	.442	.023	.002	.114	2.400	.072
22904	82/ 8/21	NNW	.391	1.390	.001	.002	.109	1.080	.358	.020	.003	.098	.449	.060
22904	02/ 9/ 2	WSW	.110	.932	.001	BDL	.020	.283	.299	.012	.001	.049	.376	.042
22904	82/10/ 2	NE	.115	.841	.001	BDL	.029	.282	.220	.025	.001	.039	.704	.037
22904	82/10/14	WSW	.143	1.770	.001	.001	.017	.282	.692	.012	.001	.033	.748	.034
22904	82/10/20	SW	.182	1.120	.001	.001	.008	.319	.267	.014	.001	.051	1.070	.035
22904	02/11/ 7	SSW	.295	.763	.001	.001	.007	.327	.220	.011	.003	.023	.826	.035
22904	82/11/25	SW	.196	.908	.001	BDL	.012	.272	.204	.010	.001	.040	.506	.033
22904	02/12/ 7	NNW	.120	1.040	.001	BDL	.004	.313	.260	.024	.001	.032	.554	.046
22904	82/12/13	SW	.087	.858	.001	BDL	.007	.221	.205	.011	.001	.037	.785	.030
ARITH MEAN			.222	1.082	.001	.002	.054	.398	.298	.018	.002	.051	.843	.042
STD DEV			.135	.459	.000	.000	.122	.215	.148	.010	.001	.027	.471	.015
GEO MEAN			.189	.980	.001	.002	.021	.353	.269	.014	.002	.041	.756	.036
MAXIMUM			.560	1.998	.001	.002	.574	1.080	.692	.048	.005	.114	2.400	.072
MINIMUM			.083	.380	.001	.001	.003	.140	.112	.000	.001	.002	.376	.001
# OF SAMPLE			19	19	20	13	20	19	19	20	20	20	15	20

1982 Particulate Trace Metal Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	ZN
22951	02/ 2/ 4	N	.053	.326	.002	.001	.070	.162	.105	.013	.002	.081	.256	.042
22951	02/ 2/16	N	.075	.432	.001	.001	.027	.202	.123	.009	.003	.056	.363	.044
22951	02/ 3/24	S	.191	1.443	.001	.001	.500	.443	.386	.016	.001	.046	.685	.042
22951	02/ 4/11	SW	.067	.197	.001	.002	.445	.109	.053	.004	BDL	.016	.319	.016
22951	02/ 4/17	SW	.140	.438	BDL	.001	.216	.225	.126	.009	.001	.015	.528	.016
22951	02/ 5/ 5	S	1.240	4.930	.001	.003	.813	1.720	2.110	.041	.002	.050	9.988	.044
22951	02/ 5/11	S	.087	.855	.001	.001	.170	.182	.352	.007	BDL	.051	3.143	.061
22951	02/ 5/23	N	.360	2.207	.001	.002	.181	.726	.668	.034	BDL	.054	1.163	.032
22951	02/ 6/22	S	.150	.305	.001	.001	.115	.490	.171	.013	BDL	.024	N/A	.038
22951	02/ 6/28	S	.059	.300	.001	BDL	.266	.116	.117	.005	BDL	.115	N/A	.021
22951	02/ 7/ 4	NE	.245	1.930	.001	.001	.016	.919	.548	.030	.001	.044	.694	.079
22951	82/ 7/16	S	.148	1.110	.001	.001	.608	.604	.327	.024	.003	.108	1.698	.095
22951	82/ 8/21	NNW	.317	1.850	.001	.001	.670	.588	.625	.021	.002	.083	.632	.046
22951	02/10/ 2	NE	.115	1.120	.001	BDL	.285	.286	.442	.010	.001	.028	.586	.029
22951	02/10/14	WSW	.332	3.420	.001	.001	.451	.815	1.070	.035	.003	.104	.912	.072
22951	02/10/20	SW	.376	1.530	.001	.001	.008	.422	.598	.013	.002	.030	1.523	.032
22951	02/11/ 7	SSW	.237	1.010	.001	BDL	.028	.312	.243	.009	.001	.046	1.281	.024
22951	82/11/25	SW	.119	.792	.001	BDL	.021	.214	.217	.009	BDL	.045	.556	.026
22951	02/12/ 7	NNW	.050	.889	.001	BDL	.021	.173	.211	.008	BDL	.040	.298	.035
22951	82/12/13	SW	.203	1.089	.001	BDL	.032	.360	.440	.015	BDL	.032	.985	.035
ARITH MEAN			.229	1.309	.001	.001	.247	.453	.447	.016	.002	.053	1.423	.041
STD DEV			.254	1.134	.000	.001	.244	.372	.453	.011	.001	.029	2.184	.020
GEO MEAN			.161	.936	.001	.001	.116	.346	.306	.013	.002	.046	.846	.037
MAXIMUM			1.240	4.930	.002	.003	.813	1.720	2.110	.041	.003	.115	9.988	.095
MINIMUM			.050	.197	.000	.001	.008	.109	.053	.004	.001	.015	.256	.016
# OF SAMPLE			20	20	20	14	20	20	20	20	12	20	18	20

N/A - data not available
BDL - below detection limit

1982 Particulate Trace Metal Data (ug/m3)

STATION NUMBER	DATE	WIND DIRECTION	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	ZN
22952	02/ 3/24	S	.154	1.321	.001	.001	.289	.412	.399	.017	.002	.033	.452	.044
22952	02/ 4/11	SW	.130	.407	.001	.001	.168	.282	.095	.008	BDL	.030	.198	.036
22952	02/ 4/17	SW	.116	.140	.009	.013	.441	.536	.088	.008	.031	.016	.497	.062
22952	02/ 5/11	S	.283	.031	.001	.002	.120	.320	.247	.010	.002	.030	N/A	.044
22952	02/ 5/23	N	.295	1.055	.001	.002	.054	.095	.488	.005	.002	.030	N/A	.019
22952	02/ 6/22	S	.116	.267	.001	.002	.047	.100	.091	.007	.002	.020	N/A	.034
22952	02/ 6/28	S	.163	.549	.001	.002	.094	.190	.166	.008	.002	.066	N/A	.022
22952	02/ 7/ 4	NE	.106	1.700	.001	.001	.105	.213	.341	.010	BDL	.088	1.246	.077
22952	02/ 7/16	S	.136	.956	.001	.002	.105	.273	.166	.010	BDL	.046	1.035	.035
22952	02/ 8/21	NNW	.115	2.898	.001	.001	.088	.241	.444	.009	BDL	.032	.778	.055
22952	02/ 9/ 2	WSW	.057	.384	.001	.001	.082	.209	.104	.008	BDL	.020	.376	.057
22952	02/10/ 2	NE	.037	.509	.001	BDL	.058	.105	.236	.004	BDL	.017	.247	.008
22952	02/10/14	WSW	.104	1.102	.001	.001	.082	.491	.234	.048	BDL	.035	1.017	.059
22952	02/10/20	SW	.170	.499	.001	.001	.013	.294	.141	.011	BDL	.032	.762	.020
22952	02/11/ 7	SSW	.123	.764	.001	.001	.037	.249	.170	.010	BDL	.039	.777	.056
22952	02/11/25	SW	.086	.500	.001	.001	.030	.301	.124	.010	BDL	.027	.489	.028
22952	02/12/ 7	NNW	.053	.497	.001	.001	.057	.179	.113	.010	BDL	.029	.251	.035
22952	02/12/13	SW	.082	.732	.001	.001	.099	.210	.262	.010	BDL	.024	.475	.054
ARITH MEAN			.129	.839	.001	.002	.109	.261	.217	.011	N/A	.034	.614	.041
STD DEV			.067	.628	.002	.003	.100	.119	.122	.009	N/A	.017	.315	.018
GEO MEAN			.114	.667	.001	.001	.080	.234	.187	.010	N/A	.031	.532	.037
MAXIMUM			.295	2.898	.009	.013	.441	.536	.488	.048	N/A	.088	1.246	.077
MINIMUM			.037	.140	.001	.001	.013	.095	.088	.004	N/A	.016	.198	.008
# OF SAMPLE			18	18	18	18	18	18	18	18	6	18	14	18

1982 Particulate Trace Metal Data (ug/m3)

STATION NUMBER	DATE	WIND DIRECTION	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	ZN
22953	02/ 2/ 4	N	.099	.199	BDL	BDL	.043	.164	.063	.005	BDL	.062	.118	.028
22953	02/ 2/16	N	.022	.100	.001	.001	.057	.104	.039	.004	.002	.067	.245	.026
22953	02/ 3/24	S	.062	.320	.001	.001	.019	.147	.107	.008	.002	.043	1.094	.034
22953	02/ 5/ 5	S	.127	.035	.002	.001	.032	.350	.153	.013	BDL	.051	N/A	.069
22953	02/ 5/11	S	.440	4.117	.001	.002	.194	1.671	.604	.064	BDL	.040	N/A	.126
22953	02/ 5/23	N	.139	.662	.001	.002	.028	.170	.240	.020	.002	.049	N/A	.036
22953	02/ 7/ 4	NE	.102	.752	.001	.001	.097	.271	.223	.013	BDL	.060	.794	.097
22953	02/ 7/16	S	.217	1.038	.001	.002	.088	.604	.241	.029	BDL	.065	2.063	.056
22953	02/ 8/21	NNW	.072	.779	BDL	BDL	.017	.202	.213	.008	BDL	.027	.436	.011
22953	02/ 9/ 2	WSW	.037	.299	BDL	BDL	.020	.086	.072	.005	BDL	.020	.270	.001
22953	02/10/ 2	NE	.092	2.090	.001	.001	.021	.412	.532	.040	BDL	.030	.615	.024
22953	02/10/14	WSW	.069	.424	.001	.001	.025	.174	.152	.009	BDL	.029	.892	.036
22953	02/10/20	SW	.154	.447	.001	.001	.010	.240	.136	.009	BDL	.020	1.151	.015
22953	02/11/ 7	SSW	.153	.627	.001	BDL	.001	.190	.130	.007	BDL	.028	1.161	.026
22953	02/11/25	SW	.081	.434	.001	BDL	.011	.163	.103	.006	BDL	.014	.459	.019
22953	02/12/ 7	NNW	.044	.393	.001	BDL	.084	.125	.084	.006	BDL	.018	.255	.034
22953	02/12/13	SW	.214	.840	.001	BDL	.088	.388	.241	.021	BDL	.025	1.402	.058
ARITH MEAN			.125	.859	.001	.001	.049	.321	.197	.016	N/A	.038	.782	.041
STD DEV			.096	.924	.000	.000	.047	.362	.151	.015	N/A	.017	.530	.031
GEO MEAN			.098	.595	.001	.001	.030	.234	.154	.011	N/A	.034	.597	.029
MAXIMUM			.440	4.117	.002	.002	.194	1.671	.604	.064	N/A	.067	2.063	.126
MINIMUM			.022	.100	.000	.001	.001	.084	.039	.004	N/A	.016	.118	.001
# OF SAMPLE			17	17	17	10	17	17	17	17	3	17	14	17

N/A - data not available
BDL - below detection limit

1982 Particulate Trace Metal Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	ZN
22955	02/ 2/ 4	N	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	.116	.184	BDL
22955	02/ 2/16	N	.036	.383	.001	BDL	.071	.090	.132	.009	BDL	.055	N/A	.055
22955	02/ 3/24	C	.091	.510	.001	.002	.033	.258	.151	.009	BDL	.038	.868	.032
22955	02/ 4/11	SW	.045	.141	BDL	BDL	.010	.086	.051	.005	BDL	.025	.261	.012
22955	02/ 4/17	SW	.096	.190	BDL	BDL	.009	.161	.078	.005	BDL	.015	.494	.021
22955	02/ 5/ 5	S	.470	1.012	.001	.001	.063	.757	.438	.020	BDL	.030	N/A	.026
22955	02/ 5/23	N	.155	.566	BDL	.001	.054	.240	.326	.007	BDL	.069	N/A	.018
22955	02/ 6/22	S	.027	.171	.001	.001	.073	.125	.069	.007	BDL	.024	N/A	.034
22955	02/ 6/28	C	.216	.963	.001	.001	.082	.342	.301	.011	BDL	.177	1.036	.046
22955	02/ 7/ 4	NE	.114	.721	.001	BDL	.489	.184	.277	.008	BDL	.109	.488	.056
22955	02/ 7/16	S	.331	.730	.001	.001	.316	.416	.251	.015	BDL	.051	1.657	.043
22955	02/ 8/21	NNW	.118	.759	.001	BDL	.247	.229	.326	.010	BDL	.053	1.083	.040
22955	02/ 9/ 2	WSW	.060	.339	BDL	BDL	.219	.096	.084	.005	BDL	.012	.399	.028
22955	02/10/ 2	NE	.090	.917	.026	BDL	.158	.139	.399	.005	BDL	.018	.594	.085
22955	02/11/ 7	SSW	.133	.310	BDL	N/A	.001	.173	.092	.006	BDL	.029	.701	.014
22955	02/11/25	SW	.174	.403	.001	N/A	.039	.282	.129	.016	BDL	.026	.742	.044
22955	02/12/ 7	NNW	.097	.450	.001	N/A	.053	.255	.186	.032	.002	.036	.551	.039
22955	02/12/13	SW	.216	1.814	.001	N/A	.068	.304	.978	.013	BDL	.033	1.093	.047
ARITH MEAN			.137	.579	.003	.001	.111	.230	.237	.010	N/A	.051	.725	.036
STD DEV			.112	.415	.007	.000	.126	.162	.218	.007	N/A	.042	.380	.019
GEO MEAN			.094	.408	.001	.001	.050	.174	.152	.008	N/A	.039	.625	.028
MAXIMUM			.470	1.814	.026	.002	.489	.757	.978	.032	N/A	.177	1.657	.085
MINIMUM			.005	.015	.001	.001	.001	.010	.005	.000	N/A	.012	.184	.002
# OF SAMPLE			18	18	12	6	18	18	18	18	1	18	14	18

1982 Particulate Trace Metal Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	ZN
22957	02/ 2/ 4	N	.150	.865	.001	.001	.145	.151	.248	.013	BDL	.149	.131	.093
22957	02/ 2/16	N	.138	1.432	.001	.001	.100	.266	.543	.010	.003	.089	.465	.040
22957	02/ 3/24	C	.253	2.499	.001	.001	.966	.360	1.048	.010	BDL	.065	.728	.058
22957	02/ 4/11	SW	.125	.417	.001	.001	.340	.098	.153	.004	BDL	.030	.236	.026
22957	02/ 4/17	SW	.130	.468	BDL	.001	.317	.222	.160	.008	.002	.021	.603	.027
22957	02/ 5/ 5	S	.604	6.466	.001	.001	1.160	.951	2.870	.021	BDL	.057	3.412	.047
22957	02/ 5/11	C	.582	3.016	.001	.004	2.360	.769	1.273	.024	.004	.078	3.247	.052
22957	02/ 5/23	N	.120	.566	BDL	.001	1.220	.163	.271	.006	.005	.066	.713	.068
22957	02/ 6/22	C	.097	.664	BDL	.002	.351	.238	.237	.019	BDL	.051	.388	.045
22957	02/ 6/28	S	.251	1.818	.001	.001	.162	.456	.703	.015	.002	.130	.833	.055
22957	02/ 7/ 4	NE	.097	.824	.001	N/A	.390	.169	.390	.008	.002	.084	.810	.059
22957	02/ 7/16	S	.264	1.636	.001	N/A	.048	.397	.902	.014	BDL	.057	2.225	.121
22957	02/ 8/21	NNW	.106	.812	.001	N/A	.118	.216	.420	.009	BDL	.047	.541	.038
22957	02/ 9/ 2	WSW	.067	.323	.001	N/A	.131	.097	.153	.007	BDL	.020	.510	.019
22957	02/10/ 2	NE	.092	1.070	.001	N/A	.013	.146	.646	.005	BDL	.033	.529	.012
22957	02/10/14	WSW	.097	.440	.001	N/A	.007	.192	.176	.009	BDL	.028	.758	.041
22957	02/10/20	SW	.148	.520	.009	N/A	.039	.525	.310	.008	.002	.014	.596	.049
22957	02/11/ 7	SSW	.161	.782	.001	N/A	.010	.204	.307	.007	.003	.048	.842	.044
22957	02/11/25	SW	.091	.536	.001	N/A	.009	.165	.278	.007	BDL	.019	.433	.019
22957	02/12/ 7	NNW	.042	.340	.001	N/A	.004	.130	.147	.007	BDL	.027	.254	.024
22957	02/12/13	SW	1.376	3.095	.001	N/A	.006	1.642	1.263	.021	.002	.032	4.984	.048
ARITH MEAN			.239	1.361	.001	.001	.377	.360	.595	.011	N/A	.055	1.107	.047
STD DEV			.293	1.411	.002	.001	.575	.359	.619	.006	N/A	.035	1.238	.025
GEO MEAN			.162	.945	.001	.001	.098	.262	.409	.010	N/A	.045	.715	.041
MAXIMUM			1.376	6.466	.009	.004	2.360	1.642	2.870	.024	N/A	.149	4.984	.121
MINIMUM			.042	.323	.000	.001	.004	.097	.147	.004	N/A	.014	.131	.012
# OF SAMPLE			21	21	21	10	21	21	21	21	9	21	21	21

N/A - data not available
BDL - below detection limit

1982 Particulate Trace Metal Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	ZN
22959	02/ 2/ 4	N	.056	.540	.001	BDL	.011	.046	.062	.006	BDL	.046	.150	.017
22959	02/ 2/16	N	.117	.309	.001	.001	.006	.188	.104	.010	.004	.098	.245	.043
22959	02/ 3/24	S	.198	.736	BDL	.002	.003	.435	.179	.027	BDL	.083	.916	.067
22959	02/ 4/11	SW	.124	.452	BDL	.001	.001	.156	.102	.007	BDL	.029	.477	.024
22959	02/ 4/17	SW	.156	.424	BDL	BDL	BDL	.208	.125	.007	BDL	.017	.448	.038
22959	02/ 5/ 5	S	.683	3.436	.001	.002	.007	.997	.829	.029	.002	.046	2.886	.040
22959	02/ 5/23	N	.155	1.142	.001	.003	.003	.130	.225	.010	.003	.044	N/A	.029
22959	02/ 6/22	S	.067	.317	.001	.003	.001	.081	.078	BDL	.003	.008	N/A	.022
22959	82/ 6/20	S	.309	1.444	.001	.003	.005	.270	.377	.020	.003	.077	1.109	.044
22959	82/ 7/ 4	NE	.122	.745	.001	N/A	.005	.331	.228	.017	BDL	.077	.625	.047
22959	02/ 7/16	S	.279	1.205	.001	N/A	.015	.491	.315	.019	.002	.076	1.216	.058
22959	02/ 8/21	NNW	.119	.708	.001	N/A	.012	.146	.175	.007	BDL	.020	.698	.019
22959	02/ 9/ 2	WSW	.058	.133	BDL	N/A	.016	.085	.088	.005	BDL	.028	.346	.019
22959	02/10/ 2	NE	.067	.991	.001	N/A	.004	.201	.256	.006	BDL	.032	.387	.019
22959	82/10/14	WSW	.109	.823	BDL	.001	.017	.224	.229	.013	BDL	.035	1.911	.045
22959	02/10/20	SW	.150	.669	.001	.002	.004	.274	.185	.012	BDL	.038	1.620	.052
22959	02/11/ 7	SSW	.142	.662	.001	.001	.003	.211	.128	.008	BDL	.044	1.118	.016
22959	82/11/25	SW	.057	.240	.001	BDL	.002	.118	.074	.004	BDL	.022	.709	.043
22959	02/12/ 7	NNW	.042	.256	.001	.001	.008	.119	.062	.006	BDL	.032	.336	.026
22959	82/12/13	SW	.101	.682	.001	.001	.004	.183	.210	.009	BDL	.025	.988	.008
ARITH MEAN			.156	.800	.001	.002	.007	.245	.202	.011	N/A	.044	.899	.034
STD DEV			.139	.690	.000	.001	.005	.205	.167	.007	N/A	.024	.671	.016
GEO MEAN			.121	.619	.001	.002	.005	.192	.160	.009	N/A	.037	.692	.030
MAXIMUM			.683	3.436	.001	.004	.017	.997	.829	.029	N/A	.098	2.886	.067
MINIMUM			.042	.133	.000	.001	.001	.046	.062	.000	N/A	.008	.150	.008
# OF SAMPLE			20	20	20	15	20	20	20	20	6	20	18	20

1982 Particulate Trace Metal Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	ZN
22961	02/ 2/ 4	N	.219	1.396	.002	BDL	.042	.214	.440	.016	BDL	.154	.216	.056
22961	02/ 2/16	N	.291	1.162	.001	.001	.019	.330	.381	.016	.003	.098	N/A	.049
22961	02/ 3/24	S	.207	4.432	.002	.003	.054	.849	.881	.092	.003	.096	.881	.187
22961	02/ 4/11	SW	.134	.744	.001	.001	.015	.480	.213	.013	BDL	.053	.305	.043
22961	02/ 5/ 5	S	1.408	4.685	.001	.004	.033	2.718	1.378	.069	.002	.072	14.912	.043
22961	02/ 5/11	S	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	.004	2.137	BDL
22961	02/ 5/23	N	.377	2.390	.001	.001	.036	.730	.609	.027	BDL	.081	.471	.036
22961	02/ 6/22	S	.135	1.146	.001	.001	.010	.293	.396	.017	BDL	.095	.252	.045
22961	02/ 6/20	S	.123	1.590	.001	.001	.025	.575	.335	.046	BDL	.047	.966	.050
22961	02/ 7/ 4	NE	.118	1.731	.001	.002	.082	.581	.488	.043	BDL	.080	1.180	.064
22961	02/ 7/16	S	.242	2.739	.001	.003	.103	1.042	.714	.052	BDL	.098	3.739	.065
22961	02/ 8/21	NNW	.072	.924	BDL	.001	.111	.290	.296	.019	BDL	.031	.644	.033
22961	02/ 9/ 2	WSW	.060	.819	BDL	.002	.068	.338	.224	.033	BDL	.027	.395	.020
22961	02/10/ 2	NE	.065	1.160	.001	.001	.082	.227	.448	.014	BDL	.030	.722	.022
22961	82/10/14	WSW	.099	1.051	BDL	.002	.125	.335	.313	.018	BDL	.043	1.006	.034
22961	82/10/20	SW	.189	.878	.001	.002	.024	.455	.245	.019	BDL	.023	1.294	.038
22961	82/11/ 7	SSW	.145	1.461	.001	.002	.022	.623	.336	.041	BDL	.042	1.251	.049
22961	82/11/25	SW	.088	1.702	BDL	.002	.008	.639	.417	.041	BDL	.032	.642	.036
22961	02/12/ 7	NNW	.097	2.184	BDL	.002	.032	.554	.664	.043	BDL	.041	.650	.065
22961	02/12/13	SW	.289	4.949	.001	.002	.048	2.801	1.015	.162	BDL	.034	1.830	.128
ARITH MEAN			.222	1.850	.001	.002	.047	.705	.490	.039	N/A	.059	1.764	.053
STD DEV			.288	1.332	.000	.001	.035	.724	.308	.035	N/A	.035	3.203	.039
GEO MEAN			.137	1.292	.001	.002	.034	.452	.360	.026	N/A	.047	.923	.040
MAXIMUM			1.408	4.949	.002	.004	.125	2.801	1.378	.162	N/A	.154	14.912	.187
MINIMUM			.065	.015	.001	.001	.005	.010	.005	.000	N/A	.004	.216	.002
# OF SAMPLE			20	20	14	20	20	20	20	20	3	20	19	20

N/A - data not available
BDL - below detection limit

1982 Particulate Trace Metal Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	AL	CA	CD	CR	CU	FE	MG	MN	NI	PB	SI	ZN
22963	02/ 2/16	N	.163	.744	.002	BDL	.020	.139	.239	.009	.002	.120	.468	.042
22963	02/ 3/24	S	.225	.909	.001	.001	.012	.269	.292	.012	.004	.122	.227	.060
22963	02/ 4/11	SW	.291	3.099	.001	.002	.025	.832	.815	.047	.002	.097	.035	.082
22963	02/ 4/17	SW	.220	1.125	BDL	.002	.008	.769	.263	.045	BDL	.022	.662	.029
22963	82/ 5/ 5	S	.946	19.756	.001	.003	.084	1.493	2.446	.048	.003	.074	5.838	.044
22963	02/ 5/11	S	.965	10.729	.001	.006	.074	2.861	2.095	.235	.002	.055	6.140	.101
22963	82/ 5/23	N	.106	.712	BDL	.001	.058	.181	.276	.008	BDL	.060	.492	.061
22963	02/ 6/22	S	.058	.675	.001	BDL	.070	.355	.165	.019	BDL	BDL	.515	.047
22963	02/ 6/28	S	.379	7.410	.001	.003	.103	1.773	1.683	.126	.004	.089	2.167	.103
22963	02/ 7/ 4	NE	.124	.952	.001	BDL	.115	.369	.277	.018	BDL	.071	1.720	.057
22963	02/ 7/16	S	.002	.060	.114	.070	.296	.127	.038	.008	.005	.052	4.243	.045
22963	02/ 8/21	NNW	.096	1.018	.001	BDL	.023	.236	.322	.010	BDL	.006	.745	.025
22963	82/ 9/ 2	WSW	.085	.665	.001	BDL	.024	.169	.167	.013	BDL	.014	.235	.023
22963	02/10/ 2	NE	.115	1.803	.001	BDL	.340	.256	.561	.014	BDL	.024	1.092	.021
22963	02/10/14	WSW	.104	.584	.001	BDL	.177	.195	.154	.009	BDL	.018	.658	.024
22963	82/10/20	SW	.201	1.754	BDL	BDL	.098	.482	.360	.031	BDL	.009	1.221	.041
22963	02/11/ 7	SSW	.172	.803	.001	BDL	.114	.236	.170	.008	BDL	.026	1.300	.027
22963	02/11/25	SW	.099	.622	.001	BDL	.016	.182	.137	.009	BDL	.020	.539	.035
22963	82/12/ 7	NNW	.075	.528	BDL	BDL	.014	.170	.117	.008	BDL	.025	.281	.036
22963	02/12/13	SW	.122	1.411	.001	.002	.017	.339	.375	.017	BDL	.041	1.105	.064
ARITH MEAN			.228	2.770	.006	.009	.083	.576	.544	.035	N/A	.050	1.421	.048
STD DEV			.240	4.548	.024	.020	.088	.668	.657	.052	N/A	.038	1.736	.023
GEO MEAN			.162	1.256	.001	.003	.049	.370	.323	.020	N/A	.034	.742	.044
MAXIMUM			.965	19.756	.114	.070	.340	2.861	2.446	.235	N/A	.122	6.140	.103
MINIMUM			.058	.060	.000	.001	.008	.127	.038	.008	N/A	.004	.035	.021
# OF SAMPLE			21	21	21	10	21	21	21	21	8	21	21	21

N/A - data not available
BDL - below detection limit

1982 Particulate Ions Data (ug/m3)
Whatman 41 Filter

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22904	82/ 2/ 4	N	.0600	BDL	.3000	1.4000	BDL	1.8000
22904	82/ 2/16	N	BDL	BDL	4.2000	2.0000	BDL	14.3000
22904	82/ 3/24	S	BDL	BDL	1.8000	2.3000	BDL	6.6000
22904	82/ 4/17	SW	.0300	BDL	1.9000	2.1000	BDL	6.4000
22904	82/ 5/ 5	S	.1200	BDL	1.7000	3.2000	BDL	4.9000
22904	82/ 5/11	S	.1000	BDL	1.5000	3.1000	BDL	4.3000
22904	82/ 5/23	N	.0900	BDL	1.7000	4.2000	BDL	3.4000
22904	82/ 6/22	S	.0600	BDL	1.4000	1.9000	BDL	4.1000
22904	82/ 6/28	S	BDL	BDL	6.2000	1.1000	BDL	23.6000
22904	82/ 7/ 4	NE	.2500	.0100	2.0000	4.7000	BDL	5.3000
22904	82/ 7/16	S	BDL	.0100	7.6000	.2000	BDL	32.3000
22904	82/ 8/21	NNW	.1400	.0100	.3000	.9000	BDL	1.4000
22904	82/ 9/ 2	WSW	BDL	.0100	2.2000	2.2000	BDL	7.8000
22904	82/10/ 2	NE	.1700	.0100	.4000	1.3000	BDL	1.5000
22904	82/10/14	WSW	.0700	.0100	1.4000	2.8000	BDL	3.8000
22904	82/10/20	SW	.0600	.0100	2.1000	1.5000	BDL	7.4000
22904	82/11/ 7	SSW	.1400	.0100	2.0000	4.9000	BDL	4.6000
22904	82/11/25	SW	.0100	.0100	2.3000	3.8000	BDL	8.0000
22904	82/12/ 7	NNW	.0600	.0100	1.0000	3.4000	BDL	2.2000
22904	82/12/13	SW	.5100	.0100	.7000	2.5000	BDL	2.7000
ARITH MEAN			.0947	.0100	2.1350	2.4750	N/A	7.3200
STD DEV			.1149	.0000	1.8145	1.2506	N/A	7.5873
GEO MEAN			.0426	.0100	1.5470	2.0600	N/A	5.077
MAXIMUM			.5100	.0100	7.6000	4.9000	N/A	32.3000
MINIMUM			.0050	.0100	.3000	.2000	N/A	1.4000
# OF SAMPLE			20	11	20	20	0	20

1982 Particulate Ions Data (ug/m3)
Whatman 41 Filter

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22951	82/ 2/ 4	N	.4600	BDL	1.3000	1.6000	BDL	5.1000
22951	82/ 2/16	N	BDL	BDL	4.1000	1.5000	BDL	14.0000
22951	82/ 3/24	S	.1700	BDL	3.7000	4.6000	BDL	8.6000
22951	82/ 4/11	SW	BDL	BDL	2.4000	2.7000	BDL	6.3000
22951	82/ 4/17	SW	.0300	BDL	1.5000	2.0000	BDL	4.2000
22951	82/ 5/ 5	S	.2500	BDL	1.1000	2.5000	BDL	4.4000
22951	82/ 5/11	S	.1900	BDL	2.2000	3.9000	BDL	5.0000
22951	82/ 5/23	N	.0200	BDL	1.4000	3.5000	BDL	3.9000
22951	82/ 6/22	S	.0300	BDL	1.0000	1.6000	BDL	2.9000
22951	82/ 6/28	S	.0200	BDL	6.9000	3.8000	BDL	22.5000
22951	82/ 7/ 4	NE	.1700	.0100	2.1000	4.9000	BDL	5.3000
22951	82/ 7/16	S	.0300	.0100	8.1000	3.8000	BDL	32.9000
22951	82/ 8/21	NNW	.0800	.0100	.3000	.5000	BDL	1.0000
22951	82/10/ 2	NE	.3200	.0100	.3000	.7000	BDL	2.8000
22951	82/10/14	WSW	.1600	.0100	1.2000	2.7000	BDL	3.1000
22951	82/10/20	SW	.6800	.0100	1.2000	1.4000	BDL	3.6000
22951	82/11/ 7	SSW	.2300	.0100	1.9000	4.6000	BDL	4.5000
22951	82/11/25	SW	.2200	.0100	1.4000	4.9000	BDL	2.7000
22951	82/12/ 7	NNW	.2200	.0100	1.1000	3.6000	BDL	2.9000
22951	82/12/13	SW	.9500	.0100	.8000	2.7000	BDL	3.2000
ARITH MEAN			.2120	.0100	2.2000	2.8750	N/A	6.9450
STD DEV			.2368	.0000	2.0065	1.3513	N/A	7.5861
GEO MEAN			.0966	.0100	1.5727	2.4616	N/A	4.8681
MAXIMUM			.9500	.0100	8.1000	4.9000	N/A	32.9000
MINIMUM			.0050	.0100	.3000	.5000	N/A	1.0000
# OF SAMPLE			20	10	20	20	0	20

N/A - data not available
BDL - below detection limit

1982 Particulate Ions Data (ug/m3)
Whatman 41 Filter

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22952	82/ 3/24	S	BDL	BDL	1.8000	1.3000	BDL	7.1000
22952	82/ 4/11	SW	BDL	BDL	2.3000	1.9000	BDL	6.7000
22952	82/ 4/17	SW	.0300	BDL	1.3000	1.4000	BDL	3.9000
22952	82/ 5/11	S	.2100	BDL	1.4000	2.5000	BDL	4.5000
22952	82/ 5/23	N	.1500	BDL	1.3000	2.7000	BDL	3.6000
22952	82/ 6/22	S	.1400	BDL	1.2000	1.5000	BDL	3.4000
22952	82/ 6/28	S	.0800	BDL	5.1000	1.3000	BDL	18.9000
22952	82/ 7/ 4	NE	.2100	.0100	1.3000	4.2000	BDL	4.8000
22952	82/ 7/16	S	BDL	.0100	5.6000	.3000	BDL	23.4000
22952	82/ 8/21	NNW	.1200	.0100	.1000	.6000	BDL	1.1000
22952	82/ 9/ 2	WSW	.0100	.0100	2.3000	1.8000	BDL	8.2000
22952	82/10/ 2	NE	.1600	.0100	.4000	1.0000	BDL	1.3000
22952	82/10/14	WSW	.2200	.0200	1.0000	2.8000	BDL	3.5000
22952	82/10/20	SW	.0800	.0100	1.1000	1.6000	BDL	4.4000
22952	82/11/ 7	SSW	.1700	.0100	1.7000	4.6000	BDL	4.8000
22952	82/11/25	SW	.0700	.0100	1.0000	3.7000	BDL	2.2000
22952	82/12/ 7	NNW	.1700	.0100	.7000	2.8000	BDL	1.8000
22952	82/12/13	SW	.3500	.0100	.6000	2.2000	BDL	2.4000
	ARITH MEAN		.1214	.0109	1.6778	2.1222	N/A	5.8889
	STD DEV		.0921	.0029	1.4164	1.1531	N/A	5.7614
	GEO MEAN		.0666	.0107	1.2113	1.7701	N/A	4.2181
	MAXIMUM		.3500	.0200	5.6000	4.6000	N/A	23.4000
	MINIMUM		.0050	.0100	.1000	.3000	N/A	1.1000
	# OF SAMPLE		18	11	18	18	0	18

1982 Particulate Ions Data (ug/m3)
Whatman 41 Filter

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22953	82/ 2/ 4	N	.2900	BDL	1.2000	1.5000	BDL	4.1000
22953	82/ 2/16	N	.0200	BDL	3.5000	1.5000	BDL	13.5000
22953	82/ 3/24	S	.0700	BDL	1.5000	2.7000	BDL	6.7000
22953	82/ 5/ 5	S	.2900	BDL	.8000	2.8000	BDL	4.3000
22953	82/ 5/11	S	.0900	BDL	1.2000	3.0000	BDL	3.3000
22953	82/ 5/23	N	.3100	BDL	2.1000	4.1000	BDL	4.0000
22953	82/ 7/ 4	NE	.0700	.0100	1.6000	4.3000	BDL	4.5000
22953	82/ 7/16	S	BDL	.0100	5.9000	.2000	BDL	25.7000
22953	82/ 8/21	NNW	.0100	.0100	.1000	.4000	BDL	.8000
22953	82/ 9/ 2	WSW	BDL	.0100	2.1000	1.9000	BDL	6.6000
22953	82/10/ 2	NE	.3700	.0100	.2000	1.1000	BDL	2.1000
22953	82/10/14	WSW	.1500	.0100	1.0000	2.3000	BDL	2.8000
22953	82/10/20	SW	.0500	.0100	.9000	1.7000	BDL	3.7000
22953	82/11/ 7	SSW	.0100	.0100	1.6000	3.7000	BDL	3.8000
22953	82/11/25	SW	BDL	.0100	.9000	3.2000	BDL	1.7000
22953	82/12/ 7	NNW	.1600	.0100	.9000	2.9000	BDL	1.5000
22953	82/12/13	SW	.3800	.0100	.7000	2.4000	BDL	2.6000
	ARITH MEAN		.1344	.0100	1.5412	2.3353	N/A	5.3941
	STD DEV		.1345	.0000	1.3364	1.1509	N/A	5.8001
	GEO MEAN		.0557	.0100	1.0867	1.8863	N/A	3.7956
	MAXIMUM		.3800	.0100	5.9000	4.3000	N/A	25.7000
	MINIMUM		.0050	.0100	.1000	.2000	N/A	.8000
	# OF SAMPLE		17	11	17	17	0	17

N/A - data not available
BDL - below detection limit

1982 Particulate Ions Data (ug/m3)
Whatman 41 Filter

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22955	82/ 2/ 4	N	.2300	BDL	1.6000	2.4000	BDL	5.1000
22955	82/ 2/16	N	.2100	BDL	3.3000	3.4000	BDL	11.4000
22955	82/ 3/24	S	.0900	BDL	2.1000	1.8000	BDL	7.9000
22955	82/ 4/11	SW	BDL	BDL	2.2000	3.2000	BDL	6.2000
22955	82/ 4/17	SW	.0300	BDL	1.3000	1.8000	BDL	4.1000
22955	82/ 5/ 5	S	BDL	BDL	1.0000	2.1000	BDL	3.7000
22955	82/ 5/23	N	BDL	BDL	1.7000	3.4000	BDL	4.3000
22955	82/ 6/22	S	BDL	BDL	1.1000	1.8000	BDL	3.0000
22955	82/ 6/28	S	BDL	BDL	6.3000	2.4000	BDL	21.9000
22955	82/ 7/ 4	NE	.2300	.0100	1.5000	3.3000	BDL	3.4000
22955	82/ 7/16	S	BDL	.0100	6.7000	.4000	BDL	27.0000
22955	82/ 8/21	NNW	.1100	.0100	.4000	.6000	BDL	1.5000
22955	82/ 9/ 2	WSW	.0900	.0100	1.8000	1.7000	BDL	5.9000
22955	82/10/ 2	NE	BDL	.0100	.4000	.9000	BDL	1.1000
22955	82/11/ 7	SSW	.2100	.0100	1.6000	3.8000	BDL	4.0000
22955	82/11/25	SW	.2100	.0100	1.0000	3.9000	BDL	2.2000
22955	82/12/ 7	NNW	.2100	.0100	1.2000	3.3000	BDL	2.0000
22955	82/12/13	SW	1.9800	.0100	.5000	2.3000	BDL	2.7000
ARITH MEAN			.3273	.0100	1.9833	2.3611	N/A	6.5222
STD DEV			.5269	.0000	1.7373	1.0436	N/A	6.8300
GEO MEAN			.1773	.0100	1.4708	2.0342	N/A	4.4751
MAXIMUM			1.9800	.0100	6.7000	3.9000	N/A	27.0000
MINIMUM			.0300	.0100	.4000	.4000	N/A	1.1000
# OF SAMPLE			11	9	18	18	0	18

1982 Particulate Ions Data (ug/m3)
Whatman 41 Filter

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22957	82/ 2/ 4	N	.2700	BDL	1.3000	1.9000	BDL	4.7000
22957	82/ 2/16	N	.0600	BDL	3.8000	2.6000	BDL	11.5000
22957	82/ 3/24	S	.0300	BDL	2.3000	3.4000	BDL	6.3000
22957	82/ 4/11	SW	BDL	BDL	2.2000	2.4000	BDL	5.6000
22957	82/ 4/17	SW	.0600	BDL	1.2000	1.5000	BDL	3.5000
22957	82/ 5/ 5	S	.1000	BDL	.9000	2.1000	BDL	3.7000
22957	82/ 5/11	S	.0900	BDL	1.5000	3.2000	BDL	4.8000
22957	82/ 5/23	N	.1000	BDL	1.5000	3.4000	BDL	3.2000
22957	82/ 6/22	S	.1500	BDL	1.2000	2.0000	BDL	3.5000
22957	82/ 6/28	S	.0800	BDL	6.4000	3.1000	BDL	23.6000
22957	82/ 7/ 4	NE	.1800	.0100	1.5000	3.5000	BDL	4.1000
22957	82/ 7/16	S	.0700	.0100	6.3000	2.8000	BDL	28.8000
22957	82/ 8/21	NNW	.1700	.0100	.4000	.6000	BDL	1.5000
22957	82/ 9/ 2	WSW	.2100	.0100	2.3000	2.3000	BDL	7.8000
22957	82/10/ 2	NE	.1000	.0100	.3000	.8000	BDL	1.2000
22957	82/10/14	WSW	.4100	.0100	1.0000	2.5000	BDL	2.7000
22957	82/10/20	SW	.2500	.0100	.9000	1.5000	BDL	3.0000
22957	82/11/ 7	SSW	.4700	.0100	1.9000	4.6000	BDL	4.2000
22957	82/11/25	SW	.2300	.0100	1.2000	4.6000	BDL	2.7000
22957	82/12/ 7	NNW	.1900	.0100	.8000	3.1000	BDL	1.5000
22957	82/12/13	SW	2.5000	.0200	.6000	2.7000	BDL	2.9000
ARITH MEAN			.2726	.0109	1.8809	2.6000	N/A	6.2286
STD DEV			.5112	.0029	1.6396	1.0212	N/A	6.9068
GEO MEAN			.1326	.0107	1.4015	2.3492	N/A	4.3067
MAXIMUM			2.5000	.0200	6.4000	4.6000	N/A	28.8000
MINIMUM			.0050	.0100	.3000	.6000	N/A	1.2000
# OF SAMPLE			21	11	21	21	0	21

N/A - data not available
BDL - below detection limit

1982 Particulate Ions Data (ug/m3)
Whatman 41 Filter

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22959	82/ 2/ 4	N	.4900	BDL	1.0000	1.5000	BDL	4.7000
22959	82/ 2/16	N	BDL	BDL	3.3000	1.0000	BDL	13.4000
22959	82/ 3/24	S	.2800	BDL	2.1000	1.3000	BDL	8.1000
22959	82/ 4/11	SW	.2400	BDL	2.1000	2.4000	BDL	6.4000
22959	82/ 4/17	SW	BDL	BDL	1.3000	1.5000	BDL	4.3000
22959	82/ 5/ 5	S	BDL	BDL	1.5000	2.8000	BDL	4.7000
22959	82/ 5/23	N	.1100	BDL	1.6000	3.1000	BDL	5.3000
22959	82/ 6/22	S	.0400	BDL	1.1000	1.8000	BDL	3.3000
22959	82/ 6/28	S	BDL	BDL	7.2000	.9000	BDL	25.0000
22959	82/ 7/ 4	NE	.1700	.0100	2.0000	5.0000	BDL	6.1000
22959	82/ 7/16	S	BDL	.0100	8.5000	.4000	BDL	28.6000
22959	82/ 8/21	NNW	.1700	.0100	.5000	.6000	BDL	.8000
22959	82/ 9/ 2	WSW	BDL	.0100	1.7000	1.4000	BDL	6.3000
22959	82/10/ 2	NE	.0100	.0100	.4000	1.3000	BDL	1.6000
22959	82/10/14	WSW	.1800	.0100	1.0000	2.2000	BDL	3.2000
22959	82/10/20	SW	.1800	.0100	1.2000	1.9000	BDL	4.4000
22959	82/11/ 7	SSW	.2200	.0100	1.6000	3.6000	BDL	4.3000
22959	82/11/25	SW	.0300	.0100	.9000	3.0000	BDL	1.7000
22959	82/12/ 7	NNW	.1000	.0100	1.0000	2.9000	BDL	1.5000
22959	82/12/13	SW	.4200	.0100	.7000	2.2000	BDL	2.6000
ARITH MEAN			.1886	.0100	2.0350	2.0400	N/A	6.8150
STD DEV			.1337	.0000	2.0529	1.0965	N/A	7.2178
GEO MEAN			.1296	.0100	1.4792	1.7364	N/A	4.5772
MAXIMUM			.4900	.0100	8.5000	5.0000	N/A	28.6000
MINIMUM			.0100	.0100	.4000	.4000	N/A	.8000
# OF SAMPLE			14	11	20	20	0	20

1982 Particulate Ions Data (ug/m3)
Whatman 41 Filter

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22961	82/ 2/ 4	N	.3900	BDL	1.2000	1.8000	BDL	4.7000
22961	82/ 2/16	N	BDL	BDL	4.1000	2.3000	BDL	14.6000
22961	82/ 3/24	S	.5400	BDL	2.0000	5.8000	BDL	9.5000
22961	82/ 4/11	SW	BDL	BDL	2.4000	2.8000	BDL	6.8000
22961	82/ 5/ 5	S	.2200	BDL	1.2000	3.1000	BDL	5.0000
22961	82/ 5/11	S	BDL	BDL	1.1000	4.0000	BDL	4.0000
22961	82/ 5/23	N	BDL	BDL	2.1000	4.3000	BDL	4.9000
22961	82/ 6/22	S	BDL	BDL	1.0000	2.3000	BDL	3.4000
22961	82/ 6/28	S	.1000	BDL	7.9000	4.1000	BDL	22.4000
22961	82/ 7/ 4	NE	.2400	.0100	1.6000	5.0000	BDL	4.4000
22961	82/ 7/16	S	.0300	.0100	1.0000	3.3000	BDL	29.2000
22961	82/ 8/21	NNW	.0900	.0100	.2000	.6000	BDL	1.0000
22961	82/ 9/ 2	WSW	.1300	.0100	2.0000	2.4000	BDL	7.0000
22961	82/10/ 2	NE	.2100	.0100	.4000	1.2000	BDL	1.6000
22961	82/10/14	WSW	.1700	.0100	1.0000	2.5000	BDL	2.8000
22961	82/10/20	SW	.3300	.0100	.6000	1.8000	BDL	3.4000
22961	82/11/ 7	SSW	.4400	.0300	1.7000	4.6000	BDL	4.8000
22961	82/11/25	SW	.2100	.0200	.9000	BDL	BDL	1.1000
22961	82/12/ 7	NNW	.2700	.0200	.7000	3.1000	BDL	1.8000
22961	82/12/13	SW	1.1200	.0400	.4000	2.9000	BDL	5.0000
ARITH MEAN			.2257	.0164	1.7105	2.8975	N/A	6.8700
STD DEV			.2563	.0098	1.7069	1.4217	N/A	7.0802
GEO MEAN			.0852	.0142	1.2040	2.2266	N/A	4.6415
MAXIMUM			1.1200	.0400	7.9000	5.8000	N/A	29.2000
MINIMUM			.0050	.0100	.2000	.0500	N/A	1.0000
# OF SAMPLE			20	11	19	20	0	20

N/A - data not available
BDL - below detection limit

1982 Particulate Ions Data (ug/m3)
Whatman 41 Filter

STAT'N NUMBER	DATE	WIND DIRECT'N	CL-	F-	NH4	NO3	P	SO4
22963	82/ 2/ 4	N	.3500	BDL	2.2000	2.3000	BDL	6.6000
22963	82/ 2/16	N	.0700	BDL	3.6000	3.5000	BDL	14.8000
22963	82/ 3/24	S	.1700	BDL	2.8000	4.8000	BDL	8.7000
22963	82/ 4/11	SW	.0600	BDL	3.1000	3.8000	BDL	7.2000
22963	82/ 4/17	SW	BDL	BDL	1.7000	2.5000	BDL	5.4000
22963	82/ 5/ 5	S	.1600	BDL	.8000	3.6000	BDL	5.3000
22963	82/ 5/11	S	.7800	BDL	1.4000	6.2000	BDL	6.3000
22963	82/ 5/23	N	.1400	BDL	2.7000	5.7000	BDL	5.2000
22963	82/ 6/22	S	BDL	BDL	1.4000	2.6000	BDL	3.9000
22963	82/ 6/28	S	.3700	BDL	7.1000	8.1000	BDL	29.8000
22963	82/ 7/ 4	NE	.2300	.0100	2.5000	5.9000	BDL	5.4000
22963	82/ 7/16	S	.2100	.0100	2.0000	6.8000	BDL	36.6000
22963	82/ 8/21	NNW	.1800	.0100	.3000	.6000	BDL	1.3000
22963	82/ 9/ 2	WSW	.0400	.0100	2.3000	2.2000	BDL	7.2000
22963	82/10/ 2	NE	.2600	.0100	.4000	1.1000	BDL	2.0000
22963	82/10/14	WSW	.1000	.0100	1.0000	2.2000	BDL	2.7000
22963	82/10/20	SW	.2400	.0100	.7000	1.5000	BDL	3.1000
22963	82/11/ 7	SSW	.2300	.0100	1.7000	4.4000	BDL	4.0000
22963	82/11/25	SW	.2500	.0100	1.4000	4.4000	BDL	2.2000
22963	82/12/ 7	NNW	.1700	.0100	1.1000	3.8000	BDL	1.9000
22963	82/12/13	SW	.9200	.0100	1.3000	3.2000	BDL	3.5000
	ARITH MEAN		.2352	.0100	1.9762	3.7714	N/A	7.7667
	STD DEV		.2231	.0000	1.4379	1.9121	N/A	8.8114
	GEO MEAN		.1374	.0100	1.5612	3.2142	N/A	5.2263
	MAXIMUM		.9200	.0100	7.1000	8.1000	N/A	36.6000
	MINIMUM		.0050	.0100	.3000	.6000	N/A	1.3000
	# OF SAMPLE		21	11	21	21	0	21

N/A - data not available
BDL - below detection limit

1982 Carbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CT	CF	RATIO (CF/CT)
22904	82/ 2/ 4	N	6.10	1.40	.230
22904	82/ 2/16	N	5.40	.90	.167
22904	82/ 3/24	S	4.40	.60	.136
22904	82/ 4/17	SW	2.60	.30	.115
22904	82/ 5/ 5	S	4.10	.60	.146
22904	82/ 5/11	S	5.70	1.10	.193
22904	82/ 5/23	N	5.20	.50	.096
22904	82/ 6/22	S	3.30	.50	.152
22904	82/ 6/28	S	10.40	1.50	.144
22904	82/ 7/ 4	NE	8.20	1.10	.134
22904	82/ 7/16	S	12.50	2.10	.168
22904	82/ 8/21	NNW	5.10	.20	.039
22904	82/ 9/ 2	WSW	6.80	1.70	.250
22904	82/10/ 2	NE	4.10	.70	.171
22904	82/10/14	WSW	5.90	.70	.119
22904	82/10/20	SW	5.90	.50	.085
22904	82/11/ 7	SSW	6.20	.70	.113
22904	82/11/25	SW	4.20	.30	.071
22904	82/12/ 7	NNW	3.90	.50	.128
22904	82/12/13	SW	4.70	.70	.149
ARITH MEAN			5.73	.83	
STD DEV			2.30	.49	
GEO MEAN			5.36	.70	
MAXIMUM			12.50	2.10	
MINIMUM			2.60	.20	
# OF SAMPLE			20	20	

1982 Carbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CT	CF	RATIO (CF/CT)
22951	82/ 2/ 4	N	4.40	.60	.136
22951	82/ 2/16	N	5.30	.30	.057
22951	82/ 3/24	S	6.70	.70	.104
22951	82/ 4/11	SW	2.70	.50	.185
22951	82/ 4/17	SW	3.40	.10	.029
22951	82/ 5/ 5	S	8.30	1.00	.120
22951	82/ 5/11	S	10.10	.90	.089
22951	82/ 5/23	N	4.30	.70	.163
22951	82/ 6/22	S	4.00	.70	.175
22951	82/ 6/28	S	10.90	1.10	.101
22951	82/ 7/ 4	NE	7.80	.50	.064
22951	82/ 7/16	S	12.70	1.30	.102
22951	82/ 8/21	NNW	4.70	1.00	.213
22951	82/10/ 2	NE	5.00	1.10	.220
22951	82/10/14	WSW	7.40	.60	.081
22951	82/10/20	SW	6.30	.60	.095
22951	82/11/ 7	SSW	8.10	.30	.037
22951	82/11/25	SW	5.50	.60	.109
22951	82/12/ 7	NNW	4.40	.50	.114
22951	82/12/13	SW	5.90	1.10	.186
ARITH MEAN			6.39	.71	
STD DEV			2.56	.31	
GEO MEAN			5.92	.62	
MAXIMUM			12.70	1.30	
MINIMUM			2.70	.10	
# OF SAMPLE			20	20	

1982 Carbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CT	CF	RATIO (CF/CT)
22952	82/ 3/24	S	4.10	1.00	.244
22952	82/ 5/11	S	5.40	.60	.111
22952	82/ 5/23	N	4.80	.40	.083
22952	82/ 6/22	S	2.30	.10	.043
22952	82/ 6/28	S	8.60	.50	.058
22952	82/ 7/ 4	NE	10.90	2.30	.211
22952	82/ 7/16	S	9.80	1.00	.102
22952	82/ 8/21	NNW	8.50	.60	.071
22952	82/ 9/ 2	WSW	5.10	.60	.118
22952	82/10/ 2	NE	3.40	1.60	.471
22952	82/10/14	WSW	5.40	1.30	.241
22952	82/10/20	SW	5.30	2.00	.377
22952	82/11/ 7	SSW	6.10	1.10	.180
22952	82/11/25	SW	3.10	1.00	.323
22952	82/12/ 7	NNW	2.80	.50	.179
22952	82/12/13	SW	3.50	.40	.114
	ARITH MEAN		5.57	.94	
	STD DEV		2.51	.59	
	GEO MEAN		5.04	.75	
	MAXIMUM		10.90	2.30	
	MINIMUM		2.30	.10	
	# OF SAMPLE		16	16	

1982 Carbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CT	CF	RATIO (CF/CT)
22953	82/ 2/16	N	5.60	.80	.143
22953	82/ 3/24	S	4.40	.30	.068
22953	82/ 5/ 5	S	6.70	1.30	.194
22953	82/ 5/11	S	5.20	1.20	.231
22953	82/ 5/23	N	4.60	.70	.152
22953	82/ 7/ 4	NE	7.60	.50	.066
22953	82/ 7/16	S	11.60	1.20	.103
22953	82/ 8/21	NNW	4.50	.30	.067
22953	82/ 9/ 2	WSW	5.00	.60	.120
22953	82/10/ 2	NE	5.00	1.00	.200
22953	82/10/14	WSW	4.90	.70	.143
22953	82/10/20	SW	5.00	.90	.180
22953	82/11/ 7	SSW	5.40	.50	.093
22953	82/11/25	SW	3.10	.20	.065
22953	82/12/ 7	NNW	2.80	.30	.107
22953	82/12/13	SW	4.70	2.20	.468
	ARITH MEAN		5.38	.79	
	STD DEV		1.95	.50	
	GEO MEAN		5.10	.66	
	MAXIMUM		11.60	2.20	
	MINIMUM		2.80	.20	
	# OF SAMPLE		16	16	

1982 Carbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CT	CF	RATIO (CF/CT)
22955	82/ 2/ 4	N	2.70	1.00	.370
22955	82/ 2/16	N	6.20	1.50	.242
22955	82/ 3/24	S	4.20	1.10	.262
22955	82/ 4/11	SW	2.40	.40	.167
22955	82/ 5/ 5	S	4.30	1.40	.326
22955	82/ 5/23	N	4.30	1.00	.233
22955	82/ 6/22	S	2.80	.70	.250
22955	82/ 6/28	S	9.80	1.00	.102
22955	82/ 7/ 4	NE	6.90	1.00	.145
22955	82/ 7/16	S	9.20	1.00	.109
22955	82/ 8/21	NNW	5.00	.30	.060
22955	82/ 9/ 2	WSW	5.80	.60	.103
22955	82/10/ 2	NE	4.20	1.30	.310
22955	82/11/ 7	SSW	5.70	1.20	.211
22955	82/11/25	SW	2.60	.30	.115
22955	82/12/ 7	NNW	2.70	.70	.259
22955	82/12/13	SW	4.60	1.00	.217
ARITH MEAN			4.91	.91	
STD DEV			2.13	.35	
GEO MEAN			4.49	.83	
MAXIMUM			9.80	1.50	
MINIMUM			2.40	.30	
# OF SAMPLE			17	17	

1982 Carbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CT	CF	RATIO (CF/CT)
22957	82/ 2/ 4	N	4.20	.70	.167
22957	82/ 2/16	N	6.00	1.00	.167
22957	82/ 3/24	S	4.60	.30	.065
22957	82/ 4/11	SW	2.20	.30	.136
22957	82/ 4/17	SW	2.70	.10	.037
22957	82/ 5/ 5	S	7.70	.70	.091
22957	82/ 5/11	S	5.50	.60	.109
22957	82/ 5/23	N	4.80	.40	.083
22957	82/ 6/22	S	2.50	.40	.160
22957	82/ 6/28	S	15.20	1.30	.086
22957	82/ 7/ 4	NE	7.50	.80	.107
22957	82/ 7/16	S	13.40	2.20	.164
22957	82/ 8/21	NNW	6.50	.70	.108
22957	82/ 9/ 2	WSW	6.30	.70	.111
22957	82/10/ 2	NE	4.20	1.30	.310
22957	82/10/14	WSW	5.70	.30	.053
22957	82/10/20	SW	6.00	1.40	.233
22957	82/11/ 7	SSW	7.00	1.20	.171
22957	82/11/25	SW	3.40	1.00	.294
22957	82/12/ 7	NNW	3.00	1.40	.467
22957	82/12/13	SW	6.20	1.80	.290
ARITH MEAN			5.93	.89	
STD DEV			3.16	.53	
GEO MEAN			5.26	.71	
MAXIMUM			15.20	2.20	
MINIMUM			2.20	.10	
# OF SAMPLE			21	21	

1982 Carbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CT	CF	RATIO (CF/CT)
22959	82/ 2/ 4	N	2.40	.30	.125
22959	82/ 2/16	N	7.10	.30	.042
22959	82/ 3/24	S	3.90	.44	.113
22959	82/ 4/11	SW	1.90	.10	.053
22959	82/ 4/17	SW	2.00	.50	.250
22959	82/ 5/ 5	S	4.90	1.00	.204
22959	82/ 5/23	N	5.00	1.00	.200
22959	82/ 6/22	S	4.80	.70	.146
22959	82/ 6/28	S	12.00	1.10	.092
22959	82/ 7/ 4	NE	7.10	3.50	.493
22959	82/ 7/16	S	11.80	5.00	.424
22959	82/ 8/21	NNW	5.00	.30	.060
22959	82/ 9/ 2	WSW	6.10	.80	.131
22959	82/10/ 2	NE	4.30	.30	.070
22959	82/10/14	WSW	7.30	1.20	.164
22959	82/10/20	SW	7.10	.50	.070
22959	82/11/ 7	SSW	6.40	.80	.125
22959	82/11/25	SW	4.20	.30	.071
22959	82/12/ 7	NNW	3.40	.60	.176
22959	82/12/13	SW	4.70	1.20	.255
ARITH MEAN			5.57	1.00	
STD DEV			2.65	1.16	
GEO MEAN			4.98	.65	
MAXIMUM			12.00	5.00	
MINIMUM			1.90	.10	
# OF SAMPLE			20	20	

1982 Carbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CT	CF	RATIO (CF/CT)
22961	82/ 2/ 4	N	3.20	.70	.219
22961	82/ 2/16	N	6.00	.40	.067
22961	82/ 3/24	S	7.20	1.40	.194
22961	82/ 4/11	SW	2.90	.90	.310
22961	82/ 4/17	SW	4.50	.40	.089
22961	82/ 5/ 5	S	8.00	1.10	.138
22961	82/ 5/11	S	7.40	.90	.122
22961	82/ 5/23	N	4.60	.80	.174
22961	82/ 6/22	S	3.44	.40	.116
22961	82/ 6/28	S	11.10	1.40	.126
22961	82/ 7/ 4	NE	8.10	1.00	.123
22961	82/ 7/16	S	12.10	1.90	.157
22961	82/ 8/21	NNW	4.50	.80	.178
22961	82/ 9/ 2	WSW	5.80	1.00	.172
22961	82/10/ 2	NE	4.40	.90	.205
22961	82/10/14	WSW	6.10	1.00	.164
22961	82/10/20	SW	5.30	.80	.151
22961	82/11/ 7	SSW	7.40	1.60	.216
22961	82/11/25	SW	3.60	.70	.194
22961	82/12/ 7	NNW	3.50	.70	.200
22961	82/12/13	SW	8.30	2.70	.325
ARITH MEAN			6.07	1.02	
STD DEV			2.47	.53	
GEO MEAN			5.61	.91	
MAXIMUM			12.10	2.70	
MINIMUM			2.90	.40	
# OF SAMPLE			21	21	

1982 Carbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	CT	CF	RATIO (CF/CT)
22963	82/ 2/ 4	N	4.10	.80	.195
22963	82/ 2/16	N	6.00	1.20	.200
22963	82/ 3/24	S	5.70	.90	.158
22963	82/ 4/11	SW	3.00	.70	.233
22963	82/ 4/17	SW	3.20	1.00	.313
22963	82/ 5/ 5	S	10.20	.80	.078
22963	82/ 5/11	S	10.50	1.70	.162
22963	82/ 5/23	N	4.20	.60	.143
22963	82/ 6/22	S	3.90	1.20	.308
22963	82/ 6/28	S	12.50	.70	.056
22963	82/ 7/ 4	NE	9.60	1.50	.156
22963	82/ 7/16	S	15.30	2.10	.137
22963	82/ 8/21	NNW	5.40	.80	.148
22963	82/ 9/ 2	WSW	6.40	1.70	.266
22963	82/10/ 2	NE	5.40	1.20	.222
22963	82/10/14	WSW	5.90	1.30	.220
22963	82/10/20	SW	5.80	1.30	.224
22963	82/11/ 7	SSW	6.40	1.30	.203
22963	82/11/25	SW	3.10	1.40	.452
22963	82/12/ 7	NNW	2.60	1.10	.423
22963	82/12/13	SW	4.90	1.90	.388
	ARITH MEAN		6.39	1.20	
	STD DEV		3.29	.40	
	GEO MEAN		5.68	1.13	
	MAXIMUM		15.30	2.10	
	MINIMUM		2.60	.60	
	# OF SAMPLE		21	21	

1982 Polynuclear Aromatic Hydrocarbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	FL	BAP	BKF	BGP	BE
22904	82/ 7/ 4	NE	.06	.03	.03	.14	.04
22904	82/ 7/16	S	.06	.01	.02	.04	.03
22904	82/ 8/21	NNW	.04	.01	.01	.02	.01
22904	82/ 9/ 2	WSW	.03	.01	.01	.02	.01
22904	82/10/ 2	NE	.04	.01	.01	.02	.01
22904	82/10/14	WSW	.03	.01	.01	.03	.01
22904	82/10/20	SW	.01	.01	.01	.05	.02
22904	82/11/ 7	SSW	.01	.01	.04	.05	.05
22904	82/11/25	SW	.01	.01	.02	.05	.03
22904	82/12/ 7	NNW	.01	.01	.03	.05	.03
22904	82/12/13	SW	.01	.01	.06	.09	.08
ARITH MEAN			.03	.01	.02	.05	.03
STD DEV			.02	.01	.02	.03	.02
GEO MEAN			.02	.01	.02	.04	.02
MAXIMUM			.06	.03	.06	.14	.08
MINIMUM			.01	.01	.01	.02	.01
# OF SAMPLE			11	11	11	11	11

1982 Polynuclear Aromatic Hydrocarbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	FL	BAP	BKF	BGP	BE
22951	82/ 7/ 4	NE	.06	.03	.03	.09	.04
22951	82/ 7/16	S	.04	.04	.04	.09	.04
22951	82/ 8/21	NNW	.01	.01	.01	.04	.01
22951	82/10/ 2	NE	.02	.01	.03	.11	.03
22951	82/10/14	WSW	.01	.01	.03	.11	.03
22951	82/10/20	SW	.01	.01	.02	.07	.02
22951	82/11/ 7	SSW	.05	.11	.17	.10	.13
22951	82/11/25	SW	.01	.03	.05	.16	.06
22951	82/12/ 7	NNW	.01	.01	.02	.13	.03
22951	82/12/13	SW	.01	.01	.07	.22	.07
ARITH MEAN			.02	.03	.05	.11	.05
STD DEV			.02	.03	.04	.05	.03
GEO MEAN			.02	.02	.03	.10	.04
MAXIMUM			.06	.11	.17	.22	.13
MINIMUM			.01	.01	.01	.04	.01
# OF SAMPLE			10	10	10	10	10

1982 Polynuclear Aromatic Hydrocarbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	FL	BAP	BKF	BGP	BE
22952	82/ 7/ 4	NE	.01	.03	.02	.11	.03
22952	82/ 7/16	S	.03	.01	.01	.04	.02
22952	82/ 8/21	NNW	.01	$/01	.01	.04	.05
22952	82/ 9/ 2	WSW	.02	.01	.01	.04	.01
22952	12/10/ 2	NE	.01	.01	.01	.04	.01
22952	82/10/14	WSW	.01	.01	.03	.04	.03
22952	82/10/20	SW	.03	.01	.02	.04	.02
22952	82/11/ 7	SSW	.01	.01	.03	.04	.06
22952	82/11/25	SW	.01	.01	.01	.04	.02
22952	82/12/ 7	NNW	.01	.01	.01	.04	.02
22952	82/12/13	SW	.01	.01	.01	.04	.04
ARITH MEAN			.01	.01	.02	.05	.03
STD DEV			.01	.01	.01	.02	.02
GEO MEAN			.01	.01	.01	.04	.02
MAXIMUM			.03	.03	.03	.11	.06
MINIMUM			.01	.01	.01	.04	.01
# OF SAMPLE			11	11	11	11	11

FL - Flouranthene BAP - Benzo(a)pyrene BKF - Benzo(k)flouranthene
BGP - Benzo(ghi)perylene BE - Perylene

1982 Polynuclear Aromatic Hydrocarbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	FL	BAP	BKF	BGP	BE
22953	82/ 2/16	N	.14	BDL	.02	.08	.05
22953	82/ 3/24	S	.15	.02	.04	.13	.06
22953	82/ 5/ 5	S	.21	.11	.12	.27	.13
22953	82/ 5/11	S	.19	.06	.04	.13	.08
22953	82/ 5/23	N	.07	BDL	.01	.05	.02
22953	82/ 7/ 4	NE	.08	.01	.02	.04	.04
22953	82/ 7/16	S	.07	.01	.02	.05	.03
22953	82/ 8/21	NNW	.01	.01	.01	.05	.01
22953	82/ 9/ 2	WSW	.02	.01	.01	.05	.01
22953	82/10/ 2	NE	.04	.01	.01	.05	.02
22953	82/10/14	WSW	.03	.01	.01	.04	.02
22953	82/10/20	SW	.03	.01	.01	.04	.02
22953	82/11/ 7	SSW	.02	.03	.04	.08	.04
22953	82/11/25	SW	.01	.02	.01	.10	.01
22953	82/12/ 7	NNW	.01	.02	.01	.05	.02
22953	82/12/13	SW	.01	.02	.02	.05	.03
ARITH MEAN			.07	.02	.02	.08	.04
STD DEV			.07	.03	.03	.06	.03
GEO MEAN			.04	.01	.02	.07	.03
MAXIMUM			.21	.11	.12	.27	.13
MINIMUM			.01	.01	.01	.04	.01
# OF SAMPLE			16	16	16	16	16

1982 Polynuclear Aromatic Hydrocarbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	FL	BAP	BKF	BGP	BE
22955	82/ 7/ 4	NE	.01	.03	.01	.11	.01
22955	82/ 7/16	S	.04	.03	.02	.11	.02
22955	82/ 8/21	NNW	.01	.03	.01	.11	.01
22955	82/ 9/ 2	WSW	.01	.02	.01	.11	.01
22955	82/10/ 2	NE	.02	.01	.01	.04	.01
22955	82/11/ 7	SSW	.01	.03	.02	.11	.02
22955	82/11/25	SW	.02	.02	.01	.08	.02
22955	82/12/ 7	NNW	.01	.02	.03	.08	.04
22955	82/12/13	SW	.03	.02	.04	.08	.05
ARITH MEAN			.02	.02	.02	.09	.02
STD DEV			.01	.01	.01	.02	.01
GEO MEAN			.02	.02	.02	.09	.02
MAXIMUM			.04	.03	.04	.11	.05
MINIMUM			.01	.01	.01	.04	.01
# OF SAMPLE			9	9	9	9	9

1982 Polynuclear Aromatic Hydrocarbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	FL	BAP	BKF	BGP	BE
22957	82/ 7/ 4	NE	.01	.01	.01	.04	.01
22957	82/ 7/16	S	.01	.03	.01	.10	.02
22957	82/ 8/21	NNW	.01	.01	.01	.04	.01
22957	82/ 9/ 2	WSW	.01	.03	.01	.11	.01
22957	82/10/ 2	NE	.02	.01	.01	.04	.01
22957	82/10/14	WSW	.01	.01	.01	.09	.02
22957	82/10/20	SW	.01	.01	.01	.04	.01
22957	82/11/ 7	SSW	.01	.01	.02	.04	.04
22957	82/11/25	SW	.01	.01	.03	.04	.03
22957	82/12/ 7	NNW	.01	.02	.02	.06	.03
22957	82/12/13	SW	.02	.02	.11	.21	.09
ARITH MEAN			.01	.02	.02	.07	.03
STD DEV			.00	.01	.03	.05	.02
GEO MEAN			.01	.01	.02	.06	.02
MAXIMUM			.02	.03	.11	.21	.09
MINIMUM			.01	.01	.01	.04	.01
# OF SAMPLE			11	11	11	11	11

FL - Flouranthene BAP - Benzo(a)pyrene BKF - Benzo(k)flouranthene
BGP - Benzo(ghi)perylene BE - Perylene

1982 Polynuclear Aromatic Hydrocarbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	FL	BAP	BKF	BGP	BE
22959	82/ 7/ 4	NE	.04	.03	.01	.07	.02
22959	82/ 7/16	S	.07	.02	.02	.06	.03
22959	82/ 8/21	NNW	.01	.01	.01	.03	.01
22959	82/ 9/ 2	WSW	.02	.01	.01	.03	.01
22959	82/10/ 2	NE	.03	.03	.01	.10	.01
22959	82/10/14	WSW	.02	.03	.01	.10	.01
22959	82/10/20	SW	.04	.01	.02	.04	.03
22959	82/11/ 7	SSW	.05	.03	.03	.10	.04
22959	82/11/25	SW	.01	.01	.01	.04	.01
22959	82/12/ 7	NNW	.01	.03	.03	.04	.03
22959	82/12/13	SW	.04	.03	.07	.15	.08
ARITH MEAN			.03	.02	.02	.07	.03
STD DEV			.02	.01	.02	.04	.02
GEO MEAN			.03	.02	.02	.06	.02
MAXIMUM			.07	.03	.07	.15	.08
MINIMUM			.01	.01	.01	.03	.01
# OF SAMPLE			11	11	11	11	11

1982 Polynuclear Aromatic Hydrocarbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	FL	BAP	BKF	BGP	BE
22961	82/ 2/ 4	N	.13	.04	.01	.10	.03
22961	82/ 2/16	N	.11	BDL	.02	BDL	.04
22961	82/ 3/24	S	.30	.08	.08	.45	.17
22961	82/ 4/11	SW	.12	.12	BDL	.03	.03
22961	82/ 4/17	SW	.21	.01	.05	.09	.07
22961	82/ 5/ 5	S	.18	.07	.03	.13	.09
22961	82/ 5/11	S	.14	.12	.10	.27	.13
22961	82/ 5/23	N	.11	BDL	.06	.45	.09
22961	82/ 6/11	S	.14	.13	.06	.18	.08
22961	82/ 6/28	S	.23	.06	.06	.13	.08
22961	82/ 7/ 4	NE	.06	.02	.02	.06	.05
22961	82/ 7/16	S	.06	.02	.02	.06	.04
22961	82/ 8/21	NNW	.04	.01	.01	.02	.02
22961	82/ 9/ 2	WSW	.03	.01	.01	.02	.02
22961	82/10/ 2	NE	.04	.01	.01	.02	.02
22961	82/10/14	WSW	.04	.02	.03	.07	.02
22961	82/10/20	SW	.03	.02	.02	.03	.02
22961	82/11/ 7	SSW	.26	.43	.35	.70	.46
22961	82/11/25	SW	.01	.01	.04	.07	.03
22961	82/12/ 7	NNW	.03	.02	.02	.08	.03
22961	82/12/13	SW	.20	.31	.38	.67	.40
ARITH MEAN			.12	.07	.07	.17	.09
STD DEV			.08	.11	.10	.21	.12
GEO MEAN			.08	.03	.03	.08	.05
MAXIMUM			.30	.43	.38	.70	.46
MINIMUM			.01	.01	.01	.01	.02
# OF SAMPLE			21	21	21	21	21

1982 Polynuclear Aromatic Hydrocarbon Data (ug/m3)

STAT'N NUMBER	DATE	WIND DIRECT'N	FL	BAP	BKF	BGP	BE
22963	82/ 2/ 4	N	.14	.02	.03	.15	.05
22963	82/ 2/16	N	.18	.12	.07	.17	.09
22963	82/ 3/24	S	.15	.10	BDL	BDL	BDL
22963	82/ 4/11	SW	.07	BDL	BDL	BDL	.01
22963	82/ 4/17	SW	.03	BDL	BDL	BDL	.01
22963	82/ 5/ 5	S	.19	.02	.03	.07	.05
22963	82/ 5/11	S	.20	.05	.05	BDL	.11
22963	82/ 5/23	N	.04	BDL	BDL	BDL	.01
22963	82/ 6/22	S	.06	BDL	.01	BDL	.01
22963	82/ 6/28	S	.14	.04	.06	.08	.07
22963	82/ 7/ 4	NE	.06	.02	.02	.08	.04
22963	82/ 7/16	S	.07	.02	.04	.06	.04
22963	82/ 8/21	NNW	.02	.01	.01	.03	.01
22963	82/ 9/ 2	WSW	.02	.01	.01	.04	.01
22963	82/10/ 2	NE	.02	.01	.01	.04	.02
22963	82/10/14	WSW	.02	.01	.01	.04	.01
22963	82/10/20	SW	.02	.03	.02	.12	.02
22963	82/11/ 7	SSW	.01	.03	.01	.12	.01
22963	82/11/25	SW	.01	.03	.01	.12	.01
22963	82/12/ 7	NNW	.01	.03	.01	.12	.01
22963	82/12/13	SW	.01	.03	.03	.12	.03
ARITH MEAN			.07	.03	.02	.09	.03
STD DEV			.07	.03	.02	.04	.03
GEO MEAN			.04	.01	.01	.08	.02
MAXIMUM			.20	.12	.07	.17	.11
MINIMUM			.01	.01	.01	.03	.01
# OF SAMPLE			21	21	21	21	21

FL - Flouranthene BAP - Benzo(a)pyrene BKF - Benzo(k)flouranthene
BGP - Benzo(ghi)perylene BE - Perylene

Appendix 2

NEMP PRECIPITATION DATA COLLECTED DURING JANUARY TO DECEMBER 1982

Data are presented on a 28 day basis according to sampling station. All concentrations are expressed in mg/l except precipitation volume which is expressed in ml. Total acidity is expressed as $CaCO_3$. (N/A) represents missing or unavailable data. The NO_3^- and NH_4^+ concentrations are expressed as N-NO_3^- and N-NH_4^+ respectively.

1982 Precipitation Trace Metal Data (MG/L)

STAT'N NUMBER	START DATE	END DATE	CA	CD	CU	FE	K	MG	MN	NA	NI	PB	P	V	ZN	AL
22902	JAN 5	FEB 2	1 2300	BDL	BDL	8290	0700	2800	0410	4400	0010	0130	0170	0030	0230	9210
22902	FEB 2	MAR 2	1 4800	N/A	N/A	N/A	0600	6000	N/A	6350	N/A	N/A	N/A	N/A	N/A	N/A
22902	MAR 2	MAR 30	8400	0002	0030	0680	0350	2008	0090	2300	BDL	0100	0030	BDL	0180	1090
22902	MAR 30	APR 27	9700	0001	0020	1410	0450	2600	0180	1800	BDL	0050	0150	BDL	0030	1180
22902	APR 27	MAY 25	6700	0002	BDL	0910	1300	1850	0070	0600	BDL	0130	1190	BDL	0110	0400
22902	MAY 25	JUN 22	2600	BDL	BDL	0240	0400	0650	0040	0150	BDL	0070	BDL	BDL	0090	0280
22902	JUN 22	JUL 20	7400	0001	BDL	0570	1900	1750	0060	0550	BDL	0090	1730	BDL	0520	0630
22902	JUL 20	AUG 17	3000	BDL	BDL	0240	0750	0700	0040	0300	BDL	0110	BDL	BDL	0070	0200
22902	AUG 17	SEP 14	3200	N/A	N/A	N/A	0900	0950	N/A	0400	N/A	N/A	N/A	N/A	N/A	N/A
22902	SEP 14	OCT 12	1900	BDL	BDL	0390	0200	0450	0030	0050	BDL	0070	BDL	BDL	0060	0240
22902	OCT 12	NOV 9	2700	BDL	0010	0250	0250	0550	0030	0450	BDL	0060	0050	BDL	0070	0170
22902	NOV 9	DEC 7	1700	BDL	BDL	0180	BDL	0500	BDL	0850	BDL	0070	0040	BDL	0050	0160
22902	DEC 7	JAN 4	4000	BDL	N/A	0320	0250	0800	0040	1800	BDL	0070	0150	BDL	0070	0310
ARITH MEAN			6031	N/A	N/A	1225	0621	1662	0090	1642	N/A	0084	0439	N/A	0135	1261
STD DEV			4091	N/A	N/A	2262	0493	1478	0110	2141	N/A	0026	0607	N/A	0134	2537
GEO MEAN			4758	N/A	N/A	0548	0423	1211	0052	0761	N/A	0083	0162	N/A	0096	0484
MAXIMUM			1 4800	N/A	N/A	8290	1900	6000	0410	6400	N/A	0130	1730	N/A	0520	9210
MINIMUM			1700	N/A	N/A	0180	0025	0450	0005	0050	N/A	0050	0030	N/A	0030	0160
# OF SAMPLE			13	11	11	11	13	13	11	13	11	11	11	11	11	11
VOL WT MEAN			5412	N/A	N/A	1130	0502	1432	0084	1550	N/A	0079	0194	N/A	0117	1191

1982 Precipitation Trace Metal Data (MG/L)

STAT'N NUMBER	START DATE	END DATE	CA	CD	CU	FE	K	MG	MN	NA	NI	PB	P	V	ZN	AL
22953	JAN 4	FEB 2	9100	BDL	BDL	4160	0400	1350	0240	1400	0020	0050	0190	0020	0140	5610
22953	FEB 2	MAR 3	5500	0004	0070	0810	0550	0750	0080	1950	BDL	0140	0140	BDL	0190	0560
22953	MAR 2	MAR 30	4100	0001	0020	0460	0250	0750	0060	1200	BDL	0050	0030	BDL	0090	0540
22953	MAR 30	APR 27	1 1000	0001	0030	1500	0600	1050	0230	1200	BDL	0040	0100	BDL	0030	1320
22953	APR 27	MAY 25	8700	0001	0040	1340	0450	1550	0090	0400	0010	0220	0330	BDL	0110	0749
22953	MAY 25	JUN 22	2800	BDL	0020	0440	2050	0550	0070	0250	BDL	0040	0710	BDL	0060	0180
22953	JUN 22	JUL 20	7800	0002	0080	0880	2200	1650	0090	0300	BDL	0100	0470	BDL	0270	0380
22953	JUL 20	AUG 17	4000	0002	0040	0340	1050	1100	0040	0350	BDL	0100	0130	BDL	0070	0340
22953	AUG 17	SEP 14	4000	BDL	0020	0640	0200	1050	0070	0250	BDL	0090	0130	BDL	0100	0610
22953	SEP 14	OCT 12	1900	BDL	0020	0400	0400	0300	0020	0400	BDL	0100	BDL	BDL	0050	0360
22953	OCT 12	NOV 9	2600	0009	0010	0090	0150	0350	0020	0600	BDL	0050	0050	BDL	0040	0040
22953	NOV 9	DEC 7	1300	BDL	BDL	0150	BDL	0200	BDL	0700	BDL	0060	BDL	BDL	0030	0140
22953	DEC 7	JAN 4	2700	0002	0010	0290	0450	0650	0020	0900	BDL	0040	0040	BDL	0090	0270
ARITH MEAN			5131	N/A	0028	0885	0675	0931	0080	0742	N/A	0083	0198	N/A	0098	0855
STD DEV			3045	N/A	0023	1031	0664	0521	0072	0513	N/A	0050	0225	N/A	0064	1408
GEO MEAN			4202	N/A	0020	0549	0411	0766	0051	0608	N/A	0072	0108	N/A	0079	0422
MAXIMUM			1 1000	N/A	0080	4160	2200	1850	0240	1950	N/A	0220	0710	N/A	0270	5610
MINIMUM			1300	N/A	0005	0090	0025	0200	0005	0250	N/A	0040	0025	N/A	0030	0040
# OF SAMPLE			13	13	13	13	13	13	13	13	13	13	13	13	13	13
VOL WT MEAN			6534	N/A	0037	0862	0961	1248	0095	0565	N/A	0102	0296	N/A	0099	0582

N/A - data not available
BDL - below detection limit

1982 Precipitation Trace Metal Data (MG/L)

STAT'N NUMBER	START DATE	END DATE	CA	CD	CU	FE	K	MG	MN	NA	NI	PB	P	V	ZN	AL
22954	JAN 5	FEB 2	2.8000	BDL	.0040	6.0730	.2400	.3750	.1760	.4400	.0030	.0040	.1500	.0080	.0320	5.5320
22954	FEB 2	MAR 2	.4000	.0002	.0040	.0400	.0150	.0700	.0050	.1150	.0010	.0170	.0080	BDL	.0070	.0330
22954	MAR 2	MAR 30	.4300	BDL	.0030	.0340	.0150	.0750	.0040	.0900	BDL	.0070	.0010	BDL	.0080	.0420
22954	MAR 30	APR 27	.6600	.0001	.0020	.0900	.0450	.1100	.0140	.0900	BDL	.0040	.0200	BDL	.0020	.0790
22954	APR 27	MAY 25	1.2000	BDL	.0030	.1490	.0800	.2600	.0170	.0600	BDL	.0090	.0520	BDL	.0190	.1199
22954	MAY 25	JUN 22	.2600	BDL	.0020	.0380	.7150	.0650	.0040	.0900	BDL	.0050	.3200	BDL	.0100	.0260
22954	JUN 22	JUL 20	.8700	.0001	.0030	.0910	.1400	.1900	.0080	.0350	BDL	.0140	.0300	BDL	.1090	.0580
22954	JUL 20	AUG 17	.5000	BDL	BDL	.0340	.1400	.1100	.0050	.0350	BDL	.0040	.0040	BDL	.0100	.0220
22954	AUG 17	SEP 14	.6500	.0002	.0030	.1180	.1600	.1350	.0040	.0850	BDL	.0090	.0200	BDL	.0190	.0750
22954	SEP 14	OCT 12	.2100	BDL	.0010	.0250	.0300	.0400	.0030	.0300	BDL	.0130	.0040	BDL	.0050	.0220
22954	OCT 12	NOV 9	.4000	BDL	BDL	.0270	.0500	.1000	.0030	.0700	BDL	.0040	.0420	BDL	.0040	.0210
22954	NOV 9	DEC 7	.1400	BDL	BDL	.0200	.0250	.0300	BDL	.1050	BDL	.0040	BDL	BDL	.0030	.0160
22954	DEC 7	JAN 4	.1400	BDL	BDL	.0180	.0200	.0300	.0010	.0500	BDL	.0030	.0120	BDL	.0030	.0210
ARITH MEAN			.6662	N/A	.0030	.5178	.1304	.1223	.0190	.0996	N/A	.0076	.0512	N/A	.0178	.4667
STD DEV			.6812	N/A	.0013	1.6036	.1823	.0962	.0456	.1018	N/A	.0043	.0845	N/A	.0276	1.4625
GEO MEAN			.4640	N/A	.0027	.0650	.0651	.0927	.0054	.0754	N/A	.0065	.0161	N/A	.0090	.0533
MAXIMUM			2.8000	N/A	.0040	6.0730	.7150	.3750	.1760	.4400	N/A	.0170	.3200	N/A	.1090	5.5320
MINIMUM			.1400	N/A	.0010	.0180	.0150	.0300	.0005	.0300	N/A	.0030	.0010	N/A	.0020	.0160
# OF SAMPLE			13	13	13	13	13	13	13	13	13	13	13	13	13	13
VOL WT MEAN			.6598	N/A	.0022	.2850	.1805	.1302	.0135	.0813	N/A	.0082	.0699	N/A	.0262	.2503

1982 Precipitation Trace Metal Data (MG/L)

STAT'N NUMBER	START DATE	END DATE	CA	CD	CU	FE	K	MG	MN	NA	NI	PB	P	V	ZN	AL
22956	JAN 5	FEB 2	1.9300	BDL	BDL	.1500	.0700	.5200	.0030	.4700	.0020	.0080	.1830	BDL	BDL	.0440
22956	FEB 2	MAR 2	1.1500	N/A	N/A	N/A	.0600	.3700	N/A	.9500	N/A	N/A	N/A	N/A	N/A	N/A
22956	MAR 2	MAR 30	.6800	.0001	.0020	.0630	.0250	.1650	.0050	.1450	BDL	.0040	.0110	BDL	.0070	.0480
22956	MAR 30	APR 27	.9400	.0001	.0010	.2020	.0450	.2300	.0220	.1050	BDL	.0040	.0490	BDL	BDL	.0700
22956	APR 27	MAY 25	.9600	BDL	.0020	N/A	.0450	.3300	.0090	.0350	BDL	.0090	.0300	BDL	.0130	.0360
22956	MAY 25	JUN 22	.1500	BDL	BDL	.0130	.0250	.0400	.0030	.0150	BDL	.0090	BDL	BDL	.0040	.0120
22956	JUN 22	JUL 20	.5300	.0001	BDL	.0380	.0450	.0155	.0050	.0150	BDL	.0110	.0080	BDL	.0090	.0250
22956	JUL 20	AUG 17	.3100	BDL	.0010	.0410	.0950	.0600	.0030	.0150	BDL	.0020	BDL	BDL	.0050	.0080
22956	AUG 17	SEP 14	.4300	BDL	BDL	.0320	.0150	.1250	.0030	.0200	BDL	.0080	.0140	BDL	.0060	.0160
22956	SEP 14	OCT 12	.1900	BDL	BDL	.3400	.0800	.0500	.0020	.0300	BDL	.0070	.0180	BDL	.0040	.0210
22956	OCT 12	NOV 9	.2000	BDL	BDL	.0170	.0100	.0500	.0020	.0500	BDL	.0050	.0050	BDL	.0040	.0090
22956	NOV 9	DEC 7	.1400	BDL	BDL	.0140	BDL	.0500	BDL	.1100	BDL	.0060	BDL	BDL	.0020	.0080
22956	DEC 7	JAN 4	.3400	BDL	BDL	.0540	.0350	.0500	.0020	.1300	BDL	.0070	.0060	BDL	.0040	.0210
ARITH MEAN			.6115	N/A	N/A	.0876	.0425	.1581	.0050	.1608	N/A	.0068	.0276	N/A	.0050	.0282
STD DEV			.4999	N/A	N/A	.0982	.0268	.1525	.0055	.2563	N/A	.0023	.0487	N/A	.0033	.0211
GEO MEAN			.4441	N/A	N/A	.0505	.0309	.0973	.0033	.0646	N/A	.0063	.0109	N/A	.0039	.0214
MAXIMUM			1.9300	N/A	N/A	.3400	.0950	.5200	.0220	.9500	N/A	.0110	.1830	N/A	.0130	.0700
MINIMUM			.1400	N/A	N/A	.0130	.0025	.0155	.0005	.0150	N/A	.0020	.0025	N/A	.0010	.0080
# OF SAMPLE			13	12	12	11	13	13	12	13	12	12	12	12	12	12
VOL WT MEAN			.5482	N/A	N/A	.0745	.0410	.1415	.0045	.2106	N/A	.0067	.0193	N/A	.0042	.0227

N/A - data not available
BDL - below detection limit

1982 Precipitation Trace Metal Data (MG/L)

STAT'N NUMBER	START DATE	END DATE	CA	CD	CU	FE	K	MG	MN	NA	NI	PB	P	V	ZN	AL
22958	JAN 5	FEB 2	1.0900	BDL	BDL	.3900	.1700	.3900	.0160	.5100	.0020	BDL	.1550	BDL	.0190	.4640
22958	FEB 2	MAR 2	2.4600	.0004	.0040	.1170	.0650	.9250	.0130	2.5500	.0020	.0170	.0500	BDL	.0230	.0700
22958	MAR 2	MAR 30	.6100	.0002	.0010	.0580	.0300	.1150	.0050	.1400	BDL	.0020	.0060	BDL	.0070	.0910
22958	MAR 30	APR 27	1.0200	.0001	.0020	.0770	.0550	.2100	.0170	.1050	BDL	.0030	.0280	BDL	.0070	.1400
22958	APR 27	MAY 25	1.3200	BDL	.0030	.0140	.0800	.4450	.0120	.0600	BDL	.0150	.0280	BDL	.0130	.1580
22958	MAY 25	JUN 22	.2100	.0001	.0010	.0290	.0700	.0600	.0030	.0200	BDL	.0060	.0070	BDL	.0090	.1190
22958	JUN 22	JUL 20	.6900	.0002	.0060	.0580	.1200	.1900	.0060	.0300	.0010	.0100	.0170	BDL	.2190	.0360
22958	JUL 20	AUG 17	.3700	BDL	BDL	.0270	.1200	.0800	.0040	.0200	BDL	.0030	.0110	BDL	.0070	.0200
22958	AUG 17	SEP 14	.5000	.0001	BDL	.0460	.0150	.1350	.0050	.0200	BDL	.0090	.0090	BDL	.0090	.0290
22958	SEP 14	OCT 12	.1900	BDL	BDL	.0380	.0500	.0450	.0030	.0250	BDL	.0070	.0080	BDL	.0060	.0220
22958	OCT 12	NOV 9	.2500	BDL	BDL	.0200	.0100	.0700	.0020	.0700	BDL	.0040	.0060	BDL	.0050	.0190
22958	NOV 9	DEC 7	.1400	.0001	BDL	.0210	BDL	.0450	BDL	.0800	BDL	.0050	.0050	BDL	.0050	.0150
22958	DEC 7	JAN 4	.5400	.0001	BDL	.0370	.0300	.0800	.0020	.1600	BDL	.0060	.0230	BDL	.0130	.0310
ARITH MEAN			.7223	N/A	N/A	.0717	.0629	.2146	.0068	.2915	N/A	.0067	.0272	N/A	.0263	.0934
STD DEV			.6158	N/A	N/A	.0957	.0474	.2392	.0054	.6640	N/A	.0047	.0390	N/A	.0559	.1171
GEO MEAN			.5217	N/A	N/A	.0454	.0404	.1359	.0046	.0807	N/A	.0049	.0152	N/A	.0116	.0538
MAXIMUM			2.4600	N/A	N/A	.3900	.1700	.9250	.0170	2.5500	N/A	.0170	.1550	N/A	.2190	.4640
MINIMUM			.1400	N/A	N/A	.0140	.0025	.0450	.0005	.0200	N/A	.0005	.0050	N/A	.0050	.0150
# OF SAMPLE			13	13	13	13	13	13	13	13	13	13	13	13	13	13
VOL WT MEAN			.8302	N/A	N/A	.0604	.0767	.2417	.0076	.2608	N/A	.0078	.0215	N/A	.0585	.0847

1982 Precipitation Trace Metal Data (MG/L)

STAT'N NUMBER	START DATE	END DATE	CA	CD	CU	FE	K	MG	MN	NA	NI	PB	P	V	ZN	AL
22960	JAN 2	FEB 2	.7300	BDL	BDL	.9570	.0300	.1550	.0410	.1300	.0010	.0060	.0720	BDL	.0150	1.2110
22960	FEB 2	MAR 2	.6600	.0003	.0040	.0830	.0400	.1080	.0090	.1150	BDL	.0130	.0120	BDL	.0310	.0570
22960	MAR 2	MAR 30	.5400	.0001	.0010	.0480	.0300	.0950	.0050	.1300	BDL	.0050	.0060	BDL	.0110	.0440
22960	MAR 30	APR 27	.9200	.0001	.0020	.1090	.0300	.1950	.0170	.1000	BDL	.0030	.0230	BDL	.0020	.0980
22960	APR 27	MAY 25	.9700	BDL	BDL	.1019	.4350	.2850	.0100	.0350	BDL	.0060	.0650	BDL	.0110	.0810
22960	MAY 25	JUN 22	.2400	BDL	.0010	.0250	.0500	.0500	.0040	.0200	BDL	.0070	.0050	BDL	.0050	.0220
22960	JUN 22	JUL 20	2.3500	N/A	N/A	N/A	.1900	.4750	N/A	.0800	N/A	N/A	N/A	N/A	N/A	N/A
22960	JUL 20	AUG 17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
22960	AUG 17	SEP 14	.3100	BDL	BDL	.0430	.0400	.0850	.0040	.0250	BDL	.0060	.0160	BDL	.0120	.0260
22960	SEP 14	OCT 12	.5100	BDL	BDL	.0070	.0350	.0210	.0020	BDL	BDL	BDL	.0180	BDL	BDL	.0050
22960	OCT 12	NOV 9	.3000	BDL	BDL	.0160	BDL	.0500	.0020	.0550	BDL	.0030	BDL	BDL	.0050	.0120
22960	NOV 9	DEC 7	.1400	BDL	BDL	.0190	BDL	.0300	BDL	.0900	BDL	.0050	BDL	BDL	.0040	.0180
22960	DEC 7	JAN 4	.1600	BDL	BDL	.0110	.0150	.0500	.0010	.0450	BDL	.0010	.0160	BDL	.0030	.0150
ARITH MEAN			.6525	N/A	N/A	.1291	.0750	.1326	.0087	.0690	N/A	.0050	.0216	N/A	.0091	.1465
STD DEV			.5781	N/A	N/A	.2641	.1182	.1268	.0112	.0426	N/A	.0032	.0230	N/A	.0082	.3379
GEO MEAN			.4771	N/A	N/A	.0435	.0302	.0894	.0043	.0481	N/A	.0038	.0125	N/A	.0061	.0392
MAXIMUM			2.3500	N/A	N/A	.9570	.4350	.4750	.0410	.1300	N/A	.0130	.0720	N/A	.0310	1.2110
MINIMUM			.1400	N/A	N/A	.0070	.0025	.0210	.0005	.0025	N/A	.0005	.0025	N/A	.0010	.0050
# OF SAMPLE			12	11	11	11	12	12	11	12	11	11	11	11	11	11
VOL WT MEAN			.6356	N/A	N/A	.1840	.0709	.1230	.0113	.0788	N/A	.0053	.0257	N/A	.0104	.2140

N/A - data not available
BDL - below detection limit

1982 Precipitation Ions Data (MG/L)

STAT'N NUMBER	START DATE	END DATE	CL	NH3	NO3	N	SO4	ACID	PH	VOL
22902	JAN 5	FEB 2	1.0700	0.2640	0.6000	0.8300	3.1500	3.530	4.800	829
22902	FEB 2	MAR 2	1.0500	0.8100	1.2800	N/A	6.3000	5.120	4.250	380
22902	MAR 2	MAR 30	0.4400	0.9100	0.9500	1.0500	5.1500	6.540	4.140	1070
22902	MAR 30	APR 4	0.4000	0.7100	0.7200	0.6300	5.2000	3.720	4.450	1374
22902	APR 27	MAY 25	0.1400	1.3400	0.6600	2.6000	4.8000	1.630	5.720	882
22902	MAY 25	JUN 22	0.1400	0.5100	0.6800	0.5500	4.9000	8.460	N/A	3016
22902	JUN 22	JUL 20	0.2400	1.0500	0.9300	0.1800	6.5000	2.330	5.560	577
22902	JUL 20	AUG 17	0.1500	0.5700	0.6200	0.7200	5.6500	6.810	3.780	1454
22902	AUG 17	SEP 14	0.1600	0.7200	0.7600	N/A	7.1000	7.380	3.850	118
22902	SEP 14	OCT 12	0.1500	0.3620	0.5800	0.4900	3.8000	5.880	3.980	2753
22902	OCT 12	NOV 9	0.2000	0.4200	0.4200	0.5000	2.9500	4.030	4.200	1579
22902	NOV 9	DEC 7	0.2300	0.3700	0.3500	0.4800	3.1500	4.150	4.150	1503
22902	DEC 7	JAN 4	0.3800	0.3440	0.4000	0.5000	2.5000	3.640	4.320	1259
ARITH MEAN			.3669	.6446	.6885	.7755	4.7038	4.863	4.188	
STD DEV			.3130	.3064	.2446	.6148	1.4273	1.954	N/A	
GEO MEAN			.2787	.5771	.6476	.6279	4.4739	4.431	4.433	
MAXIMUM			1.0700	1.3400	1.2800	2.6000	7.1000	8.460	5.720	
MINIMUM			.1400	.2640	.3500	.1800	2.5000	1.630	3.780	
# OF SAMPLE			13	13	13	11	13	13	12	
VOL WT MEAN			.2859	.5576	.6216	.6915	4.3157	5.325	4.149	

1982 Precipitation Ions Data (MG/L)

STAT'N NUMBER	START DATE	END DATE	CL	NH3	NO3	N	SO4	ACID	PH	VOL
22953	JAN 5	FEB 2	0.3400	0.1560	0.5600	0.5000	2.9000	4.390	4.430	907
22953	FEB 2	MAR 2	0.4100	0.4900	1.1600	0.7600	4.8000	8.540	3.910	504
22953	MAR 2	MAR 30	0.2800	0.5800	0.8300	0.6900	4.9500	6.790	4.030	1762
22953	MAR 30	APR 27	0.3000	0.5800	0.7900	0.7300	5.6000	4.440	4.270	1271
22953	APR 27	MAY 25	0.2100	0.7400	0.9900	0.9600	6.5500	6.530	3.870	434
22953	MAY 25	JUN 22	0.3500	1.1400	1.4900	1.7500	10.0000	10.600	3.720	730
22953	JUN 22	JUL 20	0.1400	0.6000	0.5700	0.9300	3.9500	4.550	4.080	2693
22953	JUL 20	AUG 17	0.2200	0.8800	0.7900	1.0100	8.6500	9.710	3.790	1910
22953	AUG 17	SEP 14	0.2000	0.7000	0.9500	0.8100	8.7000	9.380	3.730	1017
22953	SEP 14	OCT 12	0.3100	0.2800	0.6100	0.3200	3.9500	6.490	3.930	1000
22953	OCT 12	NOV 9	0.1600	0.2260	0.3200	0.2900	2.3500	3.820	4.260	2301
22953	NOV 9	DEC 7	0.1700	0.2260	0.3400	0.2800	2.6500	4.280	4.260	2575
22953	DEC 7	JAN 4	0.2000	0.1960	0.3900	0.2700	2.2000	3.600	4.340	1529
ARITH MEAN			.2531	.5226	.7531	.7154	5.1731	6.394	3.988	
STD DEV			0807	.2879	.3274	.3968	2.5027	2.362	N/A	
GEO MEAN			.2404	.4390	.6824	.6127	4.5945	5.975	4.048	
MAXIMUM			.4100	1.1400	1.4900	1.7500	10.0000	10.600	4.430	
MINIMUM			.1400	.1560	.3200	.2700	2.2000	3.600	3.720	
# OF SAMPLE			13	13	13	13	13	13	13	
VOL WT MEAN			.2232	.4825	.6389	.6469	4.6468	5.829	4.039	

pH was converted to the H+ ion, averaged, then converted back to pH
N/A - data not available

1982 Precipitation Ions Data (MG/L)

STAT'N NUMBER	START DATE	END DATE	CL	NH3	NO3	N	SO4	ACID	PH	VOL
22954	JAN 5	FEB 2	0.5200	0.2480	0.5900	0.3400	4.5500	3.900	6.180	847
22954	FEB 2	MAR 2	0.3000	0.3420	0.8800	0.4500	3.1500	6.760	4.000	712
22954	MAR 2	MAR 30	0.3900	0.6900	0.9500	0.7500	4.4000	7.930	3.980	1495
22954	MAR 30	APR 27	0.2600	0.6000	0.6900	0.8600	5.3500	5.360	4.140	1528
22954	APR 27	MAY 25	0.2600	1.1500	1.1500	0.8600	7.6500	5.940	4.070	555
22954	MAY 25	JUN 22	0.2500	2.8000	0.7400	4.4000	6.4000	1.950	6.920	3089
22954	JUN 22	JUL 20	0.2800	0.9900	1.3400	1.4100	9.2500	15.100	3.740	698
22954	JUL 20	AUG 17	0.1800	0.8000	0.7600	0.9600	7.6000	8.230	3.740	1813
22954	AUG 17	SEP 14	0.2900	0.7800	0.9000	1.0600	7.7000	7.470	3.840	398
22954	SEP 14	OCT 12	0.2000	0.4200	0.7000	0.3100	4.2500	6.730	3.900	2966
22954	OCT 12	NOV 9	0.1600	0.5100	0.3700	0.8800	2.5500	2.910	4.540	2335
22954	NOV 9	DEC 7	0.2300	0.3360	0.3700	0.4000	3.1000	4.060	4.210	2267
22954	DEC 7	JAN 4	0.1400	0.2480	0.4000	0.3400	2.0000	3.810	4.250	2346
ARITH MEAN			.2662	.7626	.7569	1.0015	5.2269	6.165	4.055	
STD DEV			.0970	.6478	.2815	1.0325	2.2137	3.208	N/A	
GEO MEAN			.2507	.5979	.7026	.7398	4.7346	5.440	4.424	
MAXIMUM			.5200	2.8000	1.3400	4.4000	9.2500	15.100	6.920	
MINIMUM			.1400	.2480	.3700	.3100	2.0000	1.950	3.740	
# OF SAMPLE			13	13	13	13	13	13	13	
VOL WT MEAN			.2378	.8514	.6610	1.1848	4.6769	5.265	4.115	

Precipitation Ions Data (mg/l)

STAT'N NUMBER	START DATE	END DATE	CL	NH3	NO3	N	SO4	ACID	PH	VOL
22956	JAN 5	FEB 2	0.9100	0.1840	0.7800	0.9300	4.1000	2.800	5.820	896
22956	FEB 2	MAR 2	1.0400	0.7400	1.6100	N/A	7.3500	8.860	3.880	329
22956	MAR 2	MAR 30	0.3300	0.5700	0.9200	0.7400	4.5000	6.790	4.050	1466
22956	MAR 30	APR 27	0.3300	0.6100	0.6900	1.1800	5.5000	4.360	4.320	793
22956	APR 27	MAY 25	0.1800	0.7000	0.7700	0.9800	5.6500	4.190	4.220	574
22956	MAY 25	JUN 22	0.1600	0.4600	0.7000	0.4900	5.3500	7.470	3.800	3059
22956	JUN 22	JUL 20	0.2200	0.8700	0.9100	1.0200	8.0500	8.730	3.790	815
22956	JUL 20	AUG 17	0.1400	0.5700	0.6400	0.6900	6.3500	7.960	3.770	1183
22956	AUG 17	SEP 14	0.1700	0.6200	0.9700	0.6800	7.7500	9.170	3.760	1560
22956	SEP 14	OCT 12	0.1300	0.4400	0.6200	0.6800	3.9500	5.720	4.010	3782
22956	OCT 12	NOV 9	0.2600	0.2340	0.3300	0.4000	2.7500	4.300	4.160	2611
22956	NOV 9	DEC 7	0.2400	0.2200	0.3600	0.2800	2.9000	4.400	4.280	2140
22956	DEC 7	JAN 4	0.2500	0.2040	0.4200	0.3200	2.150	3.780	4.010	2161
ARITH MEAN			.3354	.4940	.7477	.6992	5.1038	6.041	3.996	
STD DEV			.2808	.2170	.3182	.2771	1.8527	2.129	N/A	
GEO MEAN			.2648	.4377	.6864	.6380	4.7371	5.651	4.144	
MAXIMUM			1.0400	.8700	1.6100	1.1800	8.0500	9.170	5.820	
MINIMUM			.1300	.1840	.3300	.2800	2.1500	2.800	3.760	
# OF SAMPLE			13	13	13	12	13	13	13	
VOL WT MEAN			.2494	.4246	.6366	.5956	4.4828	5.867	3.985	

PH was converted to the Hf ion, averaged, then converted back to pH.
N/A - data not available

1982 Precipitation Ions Data (MG/L)

STAT'N NUMBER	START DATE	END DATE	CL	NH3	NO3	N	SO4	ACID	PH	VOL
22958	JAN 4	FEB 2	0.8800	0.5300	0.5700	1.3000	3.1000	2.470	5.870	1378
22958	FEB 2	MAR 2	1.5000	1.0700	1.7000	1.3700	6.5000	3.400	5.000	607
22958	MAR 2	MAR 30	0.3300	0.9800	0.9200	1.1000	4.8500	6.300	4.100	1459
22958	MAR 30	APR 27	0.2900	0.6800	0.7000	1.2300	5.4000	1.210	6.810	1353
22958	APR 27	MAY 25	0.3100	2.2000	1.3300	2.5000	9.3500	4.070	4.340	499
22958	MAY 25	JUN 22	0.1400	0.6800	0.7000	0.7800	5.5000	6.540	3.900	2547
22958	JUN 22	JUL 20	0.2300	1.4800	1.0900	1.7500	8.7000	7.130	3.920	591
22958	JUL 20	AUG 17	0.1800	0.9000	0.7100	1.1000	6.9500	7.710	3.790	1648
22958	AUG 17	SEP 14	0.2000	0.9800	1.0900	1.1200	8.9000	9.240	3.740	1211
22958	SEP 14	OCT 12	0.1500	0.3620	.0800	0.4900	4.5500	5.640	4.000	3079
22958	OCT 12	NOV 9	0.3200	0.4500	0.4000	0.5000	3.0000	3.990	4.220	2164
22958	NOV 9	DEC 7	0.2000	0.5700	0.4200	0.6700	3.2000	4.060	4.250	2052
22958	DEC 7	JAN 4	0.3300	0.6500	0.5000	0.7400	2.8500	2.920	4.530	1872
ARITH MEAN			.3892	.9025	.7854	1.1292	5.6038	4.975	4.126	
STD DEV			.3682	.4737	.4174	.5309	2.2402	2.232	N/A	
GEO MEAN			.2976	.8029	.6442	1.0179	5.1556	4.399	4.498	
MAXIMUM			1.5000	2.2000	1.7000	2.5000	9.3500	9.240	6.810	
MINIMUM			.1400	.3620	.0800	.4900	2.8500	1.210	3.740	
# OF SAMPLE			13	13	13	13	13	13	13	
VOL WT MEAN			.3111	.7258	.6157	.9150	4.9389	5.029	4.097	

1982 Precipitation Ions Data (MG/L)

STAT'N NUMBER	START DATE	END DATE	CL	NH3	NO3	N	SO4	ACID	PH	VOL
22960	JAN 5	FEB 2	0.3200	0.2320	0.4900	0.3500	2.6000	3.690	4.520	1163
22960	FEB 2	MAR 2	0.5200	0.4800	1.0200	0.3500	4.7500	7.630	3.960	553
22960	MAR 2	MAR 30	0.3600	0.7700	0.8800	0.4300	4.9500	7.090	4.030	1165
22960	MAR 30	APR 27	0.2600	0.5300	0.6500	0.3000	5.1000	3.680	4.340	1525
22960	APR 27	MAY 25	0.2600	1.7400	0.9700	0.7600	6.5500	2.260	5.060	809
22960	MAY 25	JUN 22	0.1600	0.5100	0.7000	N/A	5.4500	7.550	3.840	2645
22960	JUN 22	JUL 20	0.4800	1.5400	2.0800	N/A	10.0000	N/A	3.660	120
22960	JUL 20	AUG 17	0.1500	0.8600	0.7300	0.6300	7.5500	8.160	3.890	89
22960	AUG 17	SEP 14	0.1900	0.6900	0.8500	3.3000	7.4000	8.480	3.780	1124
22960	SEP 14	OCT 12	N/A	0.0800	0.1300	0.6800	0.9500	1.260	6.110	N/A
22960	OCT 12	NOV 9	0.1700	0.3520	0.3600	0.4900	2.7000	3.580	4.270	2201
22960	NOV 9	DEC 7	0.2300	0.3000	0.3400	0.6100	3.0000	4.230	4.160	1998
22960	DEC 7	JAN 4	0.3600	0.2420	0.2800	0.6500	2.0000	3.350	4.410	1410
ARITH MEAN			.2665	.6405	.7292	.7773	4.8461	5.080	4.069	
STD DEV			.1359	.4787	.4737	.8110	2.4820	2.417	N/A	
GEO MEAN			.1959	.4818	.5928	.5948	4.1107	4.419	4.310	
MAXIMUM			.5200	1.7400	2.0800	3.3000	10.0000	8.480	6.110	
MINIMUM			.0050	.0800	.1300	.3000	.9500	1.260	3.660	
# OF SAMPLE			13	13	13	11	13	12	13	
VOL WT MEAN			.2523	.5235	.6028	.7604	4.3140	5.142	4.091	

pH was converted to the Hf ion, averaged, then converted back to pH
N/A - data not available